Vol. 1001 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

December 2, 1980

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

December 2, 1980 Volume 1001 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

June 17, 1980.

Board of Appeals Decisions Rendered in the Month of October 1980

Affirmed	182
Affirmed in part	73
Reversed	16
Total	271

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,078,352, Re. S.N. 130,032, Filed Mar. 13, 1980, Cl. 52/693, TRUSS WEB CONNECTOR, James Knowles, Owner of Record: ½ *to Jack N. Schmitt, Birmingham, Mich.,* Attorney or Agent: Arnold G. Gulko, Ex. Gp.: 254

4,097,933, Re. S.N. 165,365, Filed Jul. 2, 1980, Cl. 2/105, GARMENTS FORMED OF HELICALLY JOINED PIECES, Harry R. DePolo, Owner of Record: *Inventor,* Attorney or Agent: Robert E. Burns, et al., Ex. Gp.: 353

4,108,233, Re. S.N. 167,089, Filed Jul. 9, 1980, Cl. 157/1.37, TIRE AND CENTER SUPPORT ASSEMBLING APPARATUS, Terry G. Baer, et al., Owner of Record: *Caterpillar Tractor Company, Peoria, Ill.,* Attorney or Agent: Ralph E. Walters, et al., Ex. Gp.: 323

4,109,412, Re. S.N. 167,192, Filed Jul. 9, 1980, Cl. 46/216, TRACKWAY AND POWERED VEHICLE WITH CHANGEABLE COVERS, Makoto Saito, Owner of Record: *Tomy Kogyo Company, Inc., Tokyo, Japan,* Attorney or Agent: James D. Halsey, et al., Ex. Gp.: 333

4,123,802, Re. S.N. 166,539, Filed Jul. 7, 1980, Cl. 2/144, FOLDED TIE LINER, Myron H. Ackerman, Owner of Record: *Inventor,* Attorney or Agent: Philip K. Fitzsimmons, Ex. Gp.: 353

4,165,128, Re. S.N. 173,803, Filed Jul. 30, 1980, Cl. 297/367, INERTIALLY LOCKED HINGE FOR MOTOR VEHICLE SEAT, Willibald Strowick, et al., Owner of Record: *Keiper Automobiltechnik GmbH and Co. KG, Remscheid-Hasten, Germany,* Attorney or Agent: Lloyd M. Forster, Ex. Gp.: 355

PATENT NOTICES

Certificates of Correction for the Week of Dec. 2, 1980

3,729,116	4,192,959	4,206,175	4,213,771
3,907,694	4,193,201	4,206,252	4,213,953
4,121,429	4,193,831	4,206,442	4,214,001
4,150,837	4,194,052	4,206,653	4,216,153
4,152,366	4,195,138	4,208,514	4,216,254
4,154,088	4,195,654	4,209,377	4,217,128
4,159,280	4,196,002	4,209,505	4,217,279
4,166,832	4,196,411	4,209,532	4,217,599
4,169,725	4,196,567	4,210,461	4,217,682
4,179,961	4,196,861	4,210,538	4,218,248
4,180,382	4,197,726	4,210,559	4,219,113
4,181,135	4,198,265	4,211,040	4,219,337
4,186,101	4,200,257	4,211,086	4,219,676
4,187,240	4,201,456	4,211,251	4,220,058
4,187,336	4,202,791	4,211,886	4,220,166
4,188,363	4,204,401	4,212,717	4,220,167
4,189,263	4,205,276	4,212,806	4,220,485
4,192,340	4,205,379	4,213,223	4,220,582

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161, for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent application 6–132,451. Light-Scattering Disc Collector. Filed Mar. 21, 1980.

Patent application 6–136,210. Field Test Unit for Windscreen Optical Evaluation. Filed Apr. 1, 1980.

Patent application 6–140,529. Symmetrical 1:1 Photographic Objective Lens. Filed Apr. 15, 1980.

Patent application 6–140,530. Cable Protection From Rodents. Filed Apr. 15, 1980.

Patent application 6–140,640. A Solvent Mixture for Dissolving and Removing Epoxy Resinous Compounds. Filed Apr. 15, 1980.

Patent application 6–141,500. Analysis of Lubricating Oils for Iron Content. Filed Apr. 18, 1980.

Patent application 6–141,501. Fast Operating Switchable Operational Amplifier Driven Circuits. Filed Apr. 18, 1980.

Patent 4,201,611. Carbon/Carbon Composite for Re-Entry Vehicle Applications. Filed Apr. 17, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,201,876. Fluorine Containing Polyethers. Filed Dec. 8, 1976. Patented May 6, 1980. Not available NTIS.

Patent 4,203,642. Adjustable Connector. Filed May 25, 1979. Patented May 20, 1980. Not available NTIS.

Patent 4,203,654. Line-of-Sight Stabilization Reflector Assembly. Filed Nov. 21, 1978. Patented May 20, 1980. Not available NTIS.

Patent 4,205,124. Low Gamma Photographic Developer. Filed June 12, 1979. Patented May 27, 1980. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch, Administration Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent 4,208,861. Mechanical Shaker Assembly for Continuous Harvesting of Fruit. Filed Sept. 26, 1978, Patented June 24, 1980. Not available NTIS.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6–001,033. Improved Structural Silicon Nitride Materials Containing Rare Earth Oxide. Filed Jan. 4, 1979.

Patent application 6–002,140. High-Temperature, High-Pressure Bonding of Nested Tubular Metallic Components. Filed Jan. 9, 1979.

Patent application 6–008,622. Method of Manufacturing a Niobium-Aluminum-Germanium Superconductive Material. Filed Feb. 1, 1979.

Patent application 6–018,198. Improvements in Geothermal Electric Power and Silica Production. Filed Mar. 6, 1979.

Patent application 6–021,293. Generating End Plug Potentials in Tandem Mirror Plasma Confinement by Heating Thermal Particles So as to Escape Low Density End Stoppering Plasmas. Filed Mar. 16, 1979.

Patent application 6–022,894. Production of Field-Reversed Mirror Plasma With a Coaxial Plasma Gun. Filed Mar. 22, 1979.

Patent application 6–022,897. Pre-Treatment for Molybdenum or Molybdenum-Rich Alloy Articles To Be Plated. Filed Mar. 22, 1979.

Patent application 6–030,974. Decomposition of Silane on Tungsten or Other Materials. Filed Apr. 18, 1979.

Patent application 6–037,247. Method of Forming Single Crystals of Beta Silicon Carbide. Filed May 9, 1979.

Patent application 6–040,810. Chemical Vapor Deposition of Sialon. Filed May 21, 1979.

Patent application 6–047,444. Fe-Based Long Range Ordered Alloys. Filed June 11, 1979.

Patent application 6–047,445. Coated Woven Materials and Method of Preparation. Filed June 11, 1979.

Patent application 6–047,597. Silicon-Nitride and Metal Composite. Filed June 11, 1979.

Patent application 6–048,332. Method of Winning Aluminum Metal From Aluminous Ore. Filed June 14, 1979.

Patent application 6–052,180. Delta Ferrite-Containing Austenitic Stainless Steel Resistant to the Formation of Undesirable Phases Upon Aging. Filed June 26, 1979.

Patent application 6–052,278. Thermal Decomposition of Silane To Form Hydrogenated Amorphous Si. Filed June 26, 1979.

Patent 4,166,760. Plasma Confinement Apparatus Using Solenoidal and Mirror Coils. Filed Oct. 4, 1977. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,169,036. System for Loading Slab-Gel Holders for Electrophoresis Separation. Filed Mar. 24, 1978. Patented Sept. 25, 1979. Not available NTIS.

Patent 4,172,742. Alloys for a Liquid Metal Fast Breeder Reactor. Filed Jan. 6, 1978. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,175,954. Self-Disintegrating Raney Metal Alloys. Filed July 24, 1978. Patented Nov. 27, 1979. Not available NTIS.

Patent 4,179,349. Portable Probe To Measure Sensitization of Stainless Steel. Filed Sept. 26, 1978. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,180,428. Method for Making Hot-Pressed Fiber-Reinforced Carbide-Graphite Composite. Filed June 23, 1978. Patented Dec. 25, 1979. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent 4,202,890. 4-Carboxy-Phthalato(1,2-Diaminocyclohexane)-Platinum(II) and Alkali Metal Salts Thereof With Cyclophosphamide and Hydroxyurea in Alleviating 1210 Murine Leukemia. Filed Dec. 22, 1978. Patented May 13, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6–137,045. Laser Beam Linear Adjustable Integrating Mirror. Filed Apr. 3, 1980.

Patent application 6–141,076. Temperature Stabilization Circuit for Charge Coupled Photodiode Array. Filed Apr. 17, 1980.

Patent application 6–142,794. Localized Anodic Thinning. Filed Apr. 22, 1980.

Patent application 6–143,562. Semiconductor Composition. Filed Apr. 25, 1980.

Patent application 6–143,694. Graded Gap Semiconductor Detector. Filed Apr. 25, 1980.

Patent application 6–143,695. Growth Technique for Preparing Graded Gap Semiconductors and Devices. Filed Apr. 25, 1980.

Patent application 6–150,874. Semiconductor Laser Alignment Device. Filed May 19, 1980.

Patent 4,192,012. Crosstie Memory Bit Stretcher Detector. Filed Nov. 8, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,192,819. Method for Producing Hydrazines by Reacting Chloramine With Ammonia or Amines. Filed Aug. 18, 1978. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,194,021. Microwave InP/SiO_2 Insulated Gate Field Effect Transistor. Filed May 21, 1979. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,171. Zinc Oxide on Silicon Device for Parallel In, Serial Out, Discrete Fourier Transform. Filed July 7, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,195,221. Scanning Focused Local Oscillator Optical Heterodyne Imaging System. Filed July 3, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,195,311. Coherence Length Gated Optical Imaging System. Filed Aug. 28, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,202,042. Digital To Analog Interface for Simultaneous Analog Outputs. Filed July 5, 1977. Patented May 6, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA Code GP–2, Washington, D.C. 20546

Patent application 6–135,058. Electrically Conductive Palladium Containing Polyimide Films. Filed Mar. 28, 1980.

Patent application 6–145,107. Heat Sealable, Flame and Abrasion Resistant Coated Fabric. Filed Apr. 30, 1980.

Patent application 6–145,206. Cavity-Backed, Micro-Strip Dipole Antenna Array. Filed Apr. 30, 1980.

Patent application 6–145,209. Fully Plasma-Sprayed Compliant Backed Ceramic Turbine Seal. Filed Apr. 30, 1980.

Patent application 6–150,040. Coherently Pulsed Laser Source. Filed May 15, 1980.

Patent 4,200,721. Heat Resistant Polymers of Oxidized Styrylphosphine. Filed May 19, 1978. Patented Apr. 29, 1980. Not available NTIS.

Patent 4,201,468. Method and Apparatus for Doppler Frequency Modulation of Radiation. Filed Nov. 3, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,201,622. Method of Mitigating Titanium Impurities Effects in p-Type Silicon Material for Solar Cells. Filed Jan. 31, 1979. Patented May 6, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 12 o'clock noon and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 6, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-25-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	8-7-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-27-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-11-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	4-16-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-13-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-78
DESIGNS, GROUP 290—Vacant. Industrial Arts; Household, Personal and Fine Arts.	10-10-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-4-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-30-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	4-24-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-10-79

Expiration of patents: The patents within the range of numbers indicated below expire during September 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,102,270 to 3,105,236, inclusive
Plant Patents ..... Numbers 2,277 to 2,286, inclusive

REISSUES

DECEMBER 2, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

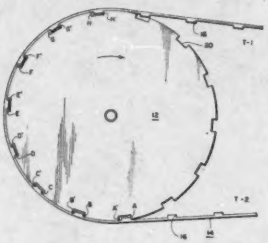
Re. 30,440
SYNCHRONOUS BELT AND PULLEY DRIVE

Joseph O. Jeffrey, Ithaca, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Original No. 4,047,444, dated Sep. 13, 1977, Ser. No. 722,237, Sep. 10, 1976. Application for reissue May 30, 1978, Ser. No. 911,019

Int. Cl.[3] F16H 7/00

U.S. Cl. 74—229 2 Claims



12. A synchronous belt and pulley drive comprising:

a driver toothed pulley and a driven toothed pulley, said pulleys being spaced from each other, and having spaced tooth gaps therein;

a toothed belt running over and engaging said pulleys and being constructed of elastomeric material at least on a surface thereof, said belt having a taut strand and a slack strand with its teeth equally spaced with the spacing defined by the tension applied thereto, the spacing of said teeth being greater than the width of said teeth to provide extensive frictional contact with the outer peripheries of said pulleys;

the spacing of the tooth gaps of said driveR pulley being equal to the spacing of the belt teeth corresponding to the design tension in the taut strand of said belt and the spacing of the tooth gaps of said driven pulley being equal to the spacing of the belt teeth corresponding to the lesser tension in the slack strand of said belt; p1 said pulley tooth gaps being of larger size than said belt teeth in order to permit the belt to wrap said pulleys without interference on the bottom and sides of the tooth gaps.

Re. 30,441
BOWLING SCORING APPARATUS AND PROGRAMMING SYSTEM THEREFOR

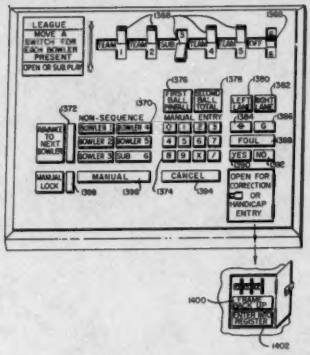
Eugene E. Reynolds, Skokie, Ill., assignor to Brunswick Corporation, Chicago, Ill.

Original No. 3,488,055, dated Jan. 6, 1970, Ser. No. 243,525, Dec. 10, 1962. Continuation of Ser. No. 243,525, Dec. 10, 1962, abandoned. Application for reissue Dec. 29, 1978, Ser. No. 974,627

Int. Cl.[3] A63D 5/04; G06F 15/44

U.S. Cl. 273—54 C 33 Claims

16. In an apparatus for computing scores of a bowling game wherein balls are rolled by each of a plurality of players during each of successive scoring frames to earn cumulative score values based upon *each player's* pinfall resulting from the rolling of said balls *by the respective player*, means for selectin predetermined players *to bowl in a sequence*, means for computing and registering the score of selected players, means for entering pinfall information into the apparatus, means for automatically conditioning the apparatus to compute and register the score of the next selected player *in said sequence based on the next selected player's pinfall* as each player completes a frame, and *manual* means for overriding said selecting means whereby to condition the apparatus to compute *and register* the frame score of a particular [bowler] *player based on the particular player's pinfall, to allow the particular player to bowl out of*



said sequence, said automatic conditioning means [conditioning] *without manual intervention automatically causing* the apparatus to compute and register the score of the next selected [bowler] *player in said sequence based on said next selected player's pinfall as a result of operation of said manual means so as to cause automatic return of said apparatus to said sequence* following the computation of the particular [bowler] *player's* score.

Re. 30,442
PROCESS FOR PRODUCING STABILIZED HIGH STRENGTH UREA-ALDEHYDE INSULATING FOAMS

William P. Moore, Jr., Hopewell, Va., assignor to Ashland Oil, Inc., Ashland, Ky.

Original No. 4,129,533, dated Dec. 12, 1978, Ser. No. 861,170, Dec. 16, 1977. Division of Ser. No. 836,492, Sep. 26, 1977, Pat. No. 4,097,419. Application for reissue Jan. 17, 1979, Ser. No. 4,017

The portion of the term of this patent subsequent to May 30, 1995, has been disclaimed.

Int. Cl.[3] C08G 12/12; C08L 1/02

U.S. Cl. 260—17.3 4 Claims

5. An improved process for producing stable urea-aldehyde polymers, having properties of high structural strength and low free formaldehyde content, from two separate storable fluids, said process comprising: blending aqueous alkyl or aryl, dialdehydes containing between two and eight molecular carbons with partially cured aqueous urea-formaldehyde resin, containing between 1.2 and 1.7 mols of formaldehyde per mol of urea and about 50 percent total solids, so that the molecular aldehyde moieties supplied by the dialdehydes are between 0.1 and 1.0 times the number of aldehyde moieties supplied by formaldehyde, and the molecular ratio of total aldehyde moieties to urea is between 1.6 and 2.2; and curing and drying the blended fluids at a pH between 2 and 5 until the polymer hardens.

PATENTS

GRANTED DEC. 2, 1980

ERRATA

For CLASS	See PATENT NO.
434–035	4,236,324
434–045	4,236,325
368–073	4,236,375
060–641	4,236,383
085–072	4,236,429
440–112	4,236,478
030–276	4,236,531
081–431	4,236,555
222–529	4,236,629
414–694	4,236,643
024–205.13 R	4,236,683
493–440	4,236,704
229–036	4,236,740
564–018	4,237,066
564–205	4,237,067
564–194	4,237,068
564–258	4,237,069
564–423	4,237,070
568–401	4,237,071
568–459	4,237,072
568–401	4,237,073
570–236	4,237,074
424–273 R	4,237,158
424–274	4,237,159
424–275	4,237,160
424–283	4,237,161
424–283	4,237,162
424–304	4,237,163
424–304	4,237,164
424–308	4,237,165
424–310	4,237,166
424–311	4,237,167
424–326	4,237,168
424–330	4,237,169
426–021	4,237,170
426–127	4,237,171
370–027	4,237,463

PATENTS

GRANTED DEC. 2, 1980

ERRATA

Class	Patent No.
434-035	4,236,324
434-043	4,236,325
368-073	4,236,175
060-641	4,236,383
085-072	4,236,459
440-112	4,236,473
030-276	4,236,531
081-431	4,236,595
222-329	4,236,629
414-664	4,236,643
024-205.13 R	4,236,683
403-340	4,236,704
229-076	4,236,740
564-018	4,237,068
564-205	4,237,067
564-194	4,237,068
564-238	4,237,069
564-423	4,237,070
568-401	4,237,071
568-459	4,237,072
568-401	4,237,073
570-256	4,237,074
424-273 R	4,237,158
424-274	4,237,159
424-275	4,237,160
424-283	4,237,161
424-283	4,237,162
424-304	4,237,163
424-304	4,237,164
424-308	4,237,165
424-310	4,237,166
424-311	4,237,167
424-256	4,237,168
424-330	4,237,169
426-021	4,237,170
426-127	4,237,171
370-027	4,237,067

PATENTS

GRANTED DECEMBER 2, 1980

GENERAL AND MECHANICAL

4,236,257
WOMEN'S UNDERGARMENTS INCLUDING VENTILATED CROTCH ASSEMBLY
Harvey F. Williams, New Rochelle, N.Y.; Raymond C. Cole, Hillsdale, and James G. Donaghy, Flanders, both of N.J., assignors to International Platex, Inc., Stamford, Conn.
Filed Apr. 10, 1978, Ser. No. 895,216
Int. Cl.[3] A41B *9/04, 9/00*
U.S. Cl. 2—406 **9 Claims**

1. A female undergarment, having a panty portion adapted to be in intimate contact with the female torso from at least the waist to the thighs,

said panty portion including a front panel adapted to cover the pelvic zone of a wearer and a rear panel adapted to cover the buttocks of a wearer, upper thigh portions at least a portion of which define the leg openings of said undergarment, and a crotch covering portion,

said crotch covering portion including a crotch assembly having a first surface ara and a second surface area, in superimposition one to the other,

said first and second surface areas of non-thermoplastic, moisture absorbent fibers with each surface area having a plurality of openings therethrough defining an open network of substantially uniform array on each surface area,

said first surface area openings network providing a system having a lesser degree of openness than the network of said second surface area and means to affix said crotch assembly to said upper thigh covering portion so as to position a major portion of said first surface area in direct proximity to and slightly spaced apart from the crotch area of the wearer, at least a major portion of said crotch assembly adapted to maintain a spatial relationship in response to body dynamics.

4,236,258
AUTOMATIC SWIMMING POOL COVER
Roger J. Batstone, Germantown, Md., assignor to French Masterpieces, Incorporated, Germantown, Md.
Filed Apr. 17, 1979, Ser. No. 30,915
Int. Cl.[3] E04H *3/16, 3/18*
U.S. Cl. 4—501 **9 Claims**

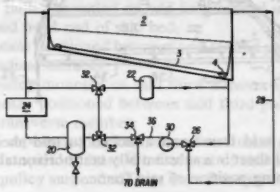
1. An automatic cover for a liquid storage container comprising:

a cover disposed within said storage container;

a membrane connected to an upper portion of said storage container and connected along the peripheral portion of said membrane to said cover, said membrane and said cover separating said storage container into a liquid storage compartment and a liquid balancing compartment;

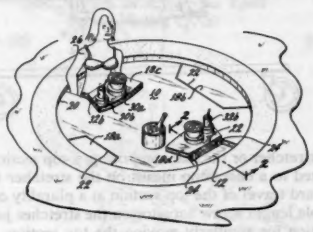
pressurized means connected to said peripheral portion of said membrane for controlling the shape and dimension of said cover; and

means for feeding balancing liquid to and for withdrawing balancing liquid from said liquid balancing compartment in such a manner that hydrostatic pressure on said storage container is maintained within a predetermined range



wherein said pressurized means comprises at least one compartment member connected along a substantial portion of said peripheral portion of said membrane.

4,236,259
SPA COVER
Gary R. Wendt, Santa Ana, Calif., assignor to Wendy S. Crane, Santa Ana, Calif., a part interest
Filed Mar. 3, 1980, Ser. No. 126,353
Int. Cl.[3] E04H *3/16, 3/18*
U.S. Cl. 4—498 **14 Claims**



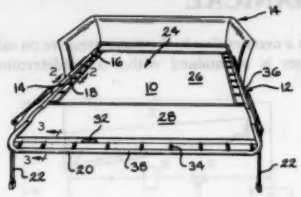
1. In a spa cover of the type including a sheet of a substantially rigid floating insulative material of such size and shape as to cover substantially the entire surface of the water in a spa to prevent heat loss from the water to the air above the water, the improvement comprising:

a panel including a portion of the edge of the spa cover, so attached to the remainder of the spa cover as to permit said panel to be doubled back on top of the remainder of the spa cover to provide at the edge of the spa cover access for a person to the water in the spa, to avoid having to remove the entire spa cover from the spa, thereby conserving the heat of the spa when the spa is used by only a limited number of persons.

4,236,260
SOFA SLEEPER WITH POLYPROPYLENE DECK ASSEMBLY
Ned W. Mizelle, Lexington, Ky., assignor to Hoover Universal, Inc., Saline, Mich.
Filed May 29, 1979, Ser. No. 43,148
Int. Cl.[3] A47C *17/13;* B23P *11/02*
U.S. Cl. 5—13 **1 Claim**

1. In a sofa sleeper mechanism which includes an open foldable frame having relatively movable head, intermediate and foot sections movable to side-by-side, generally horizontal bed-forming positions, a deck assembly mounted on said frame so as to form a yieldable support surface for a mattress or the like in the bed-forming position of the frame, said assembly

comprising a unitary sheet constructed principally of woven, heat treated polypropylene fibers, and yieldable means



mounted on said frame and attached to said sheet so as to maintain said sheet in a substantially taut horizontal position in the bed-forming position of said frame.

4,236,261

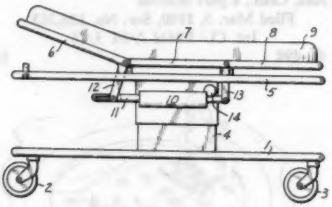
PIVOT TOP FOR STRETCHER OR THE LIKE

David F. Huempfner, Two Rivers, Wis., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 9, 1979, Ser. No. 19,043

Int. Cl.³ A61G 7/10

U.S. Cl. 5—68 **10 Claims**



1. A stretcher or the like comprising: a top section pivotally connected to a base; stop means on the stretcher to limit the downward travel of the top section at a plurality of positions; a variable length screw actuator on the stretcher joined to the top section for angularly moving the top section; said screw actuator including a nonthreaded run off section which functions as a clutch; and a slide joint on the stretcher for varying the effective length of the actuator, whereby the actuator can disengage coupling pressure with the top section at a plurality of top section positions with a common actuator length.

4,236,262

SUPPORT GRID AND SPRING UNIT FOR A BOX SPRING FOUNDATION UNIT

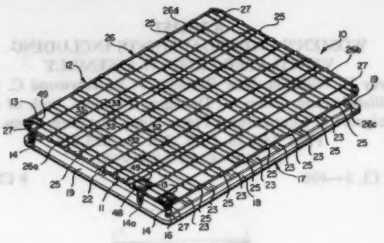
Rex S. Spiller, Sheboygan, Wis., assignor to Spiller Spring Company, Sheboygan, Wis.

Filed Jan. 31, 1979, Ser. No. 7,938

Int. Cl.³ A47C 23/04, 23/145

U.S. Cl. 5—267 **32 Claims**

1. A grid for engaging and supporting a plurality of coil springs in a predetermined spatial relationship to provide a spring unit adapted for use in a box spring foundation unit or the like, said grid comprising a first group of longitudinally extending wires and a second group of wires extending transversely to said first group, said second group of wires being connected to said first group at their crossings and defining a plurality of generally rectangular seats adapted to receive and retain the top coils of said coil springs so that said springs are maintained in said predetermined spatial arrangement, said seats being arranged in rows and columns, and the transverse width of each seat being greater than the diameter of the top coils of said coil springs so that said top coils do not overlap and are confined between the longitudinally extending portions of their respective seats when engaged therewith, and the length and width of said grid having predetermined dimensions such that the dimensions of the foundation unit in which said grid is employed are substantially equal to the standard dimen-



sions for such a unit, whereby different numbers of coil springs may be engaged with selected seats of said grid so that the firmness of the foundation unit can be varied.

4,236,263

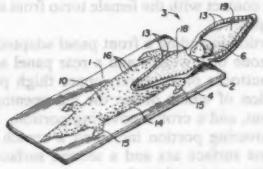
SLEEPING BAG FOR CHILDREN

Lannie Allee, 411 East Seminary St., Greencastle, Ind. 46135

Filed Feb. 21, 1979, Ser. No. 13,582

Int. Cl.³ A47G 9/08

U.S. Cl. 5—413 **6 Claims**



1. A sleeping bag having an upper side and an under side, each with an inner and outer surface, said bag being provided with an opening at one end, said underside including a pillow at the open end of the bag and said upperside including a flap at the open end of the bag, said flap being foldable back onto the upper side, said bag bearing indicia representing the body of a creature, and the pillow and the flap cooperating together to form the head of said creature, the indicia representing the mouth parts and teeth of the creature being located on the flap and pillow and aligned with the open end of the bag, so that a user entering the bag through the open end crawls past the teeth into the mouth of the indicia-represented creature.

4,236,264

RETAINED COMPRESSIBLE PILLOW SUPPORT

Agnita Britzman, 1015 E. Fourth St., Long Beach, Calif. 90802

Filed Sep. 9, 1977, Ser. No. 831,969

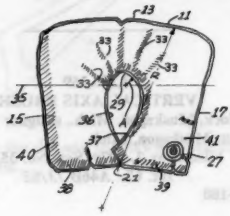
Int. Cl.³ A47G 9/00; B63C 9/16

U.S. Cl. 5—435 **12 Claims**

1. A retained compressible pillow support comprising:

a flexible closed tubular envelope, generally horseshoe shaped, and formed with a return including a transversely extending flexible back wall and a flexible curved front wall defining a yoke, said envelope being formed with hollow transversely spaced apart legs projecting forwardly from opposite sides of said yoke, the free extremities of said legs being spaced apart from each other when the pillow support is unfilled, and having respective inner walls connected to said yoke and extending longitudinally to transverse free end walls, and having outer walls leading from the transverse outer ends of said back wall, to said free end walls, said legs being of substantially uniform

width from said yoke to said free end walls, said envelope being further formed such that upon being filled with a compressible filler, the tubular walls thereof will be distended causing said back wall to distend transversely while said yoke restricts transverse distension at the front of said return, thus causing said front wall to draw the forward extremitites of said legs to urge them inwardly toward one another to define, together with said yoke, an



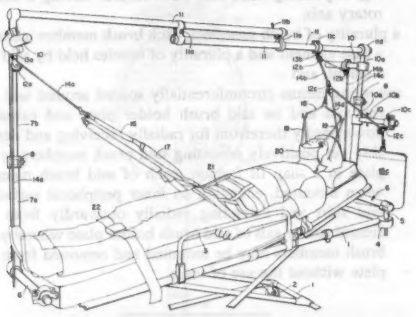
oblong aperture extending longitudinally between said legs and having a maximum width equal to the width of said yoke, whereby in use said legs may be grasped and the forward extremities thereof drawn apart for receipt of a user's extremity therebetween, and upon release of said legs, said front wall at said yoke cooperates with said back wall and filler to urge the free extremities of said legs inwardly into mutual engagement.

4,236,265

PORTABLE TRACTION APPARATUS

James Carradine, 2331 A, 17th Ave., San Francisco, Calif. 94116

Filed Mar. 9, 1979, Ser. No. 18,997
Int. Cl.³ A61F 5/04; A61G 7/10
U.S. Cl. 5—508 **3 Claims**



1. A traction apparatus mounted upon and forming a part of a movable bed frame supported on wheels and having a head end and a foot end oppositely spaced thereon comprising:

horizontal cross-frame support members fixedly positioned on said head end and said foot end;

a vertical stanchion fixedly positioned upon each of said frame support members;

a first transverse member slidably mounted upon the stanchion at the foot end of said bed;

a second transverse member slidably mounted on the stanchion at the head end of said bed;

a third transverse member slidably mounted on the stanchion at the head end of said bed above said second transverse member;

a longitudinal member mounted across said stanchion at the top thereof;

a first pulley mounted on said first transverse member;

spring means positioned between said first pulley and said first transverse member;

a first rope engaging said first pulley;

a weight suspended from a first end of said first rope;

means for engaging the waist of a person fastened to the second end of said first rope;

a second pulley mounted on said longitudinal member adjacent said head end of said bed;

spring means positioned between said second pulley and said longitudinal member;

a third pulley mounted on said third transverse member;

spring means positioned between said third pulley and said third transverse member;

a second rope engaging said second and third pulleys;

a weight suspended from the first end of said second rope;

a fourth pulley suspended from the other end of said second rope;

a fifth pulley mounted on said second transverse member;

a third rope engaging said fourth and said fifth pulleys;

a weight suspended from the first end of said third rope;

means for engaging the head and neck of a person fastened to the other end of said third rope;

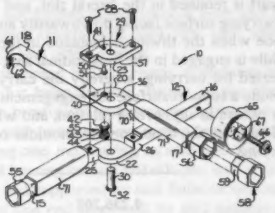
whereby the body of said person may be maintained in traction while said bed is moved.

4,236,266

COLLAPSIBLE AUTOMOTIVE TOOL

Frank E. Hannah, Rte. 1, Box 591, Canton, and Ronnie L. Hannah, 820 Chestnut Park Dr., Waynesville, both of N.C.

Filed Jan. 31, 1979, Ser. No. 8,069
Int. Cl.³ B25B 13/00
U.S. Cl. 7—100 **9 Claims**



1. A collapsible automotive tool characterized by the ability to perform a number of mechanical operations which are commonly associated with the removal and replacement of an automobile tire and wheel assembly, and comprising

a pair of elongate arms, each having opposite ends to define a total of four arm ends, with one of said arms including a generally flat medial portion and the other of said arms including a slot-like opening receiving said medial portion of said one arm therethrough;

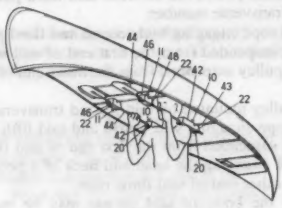
means for pivotally interconnecting said arms at substantially the longitudinal center of each arm so that said arms are disposed in a crossing relationship and are selectively pivotable within a common plane for movement between a generally parallel closed position and a perpendicular open position, said interconnecting means comprising a pin extending transversely across said opening of said other arm and through said medial portion of said one arm;

wrench implement means for releasably engaging a threaded fastener and mounted to a first one of said arm ends, so that the fastener can be rotated by pivoting the arms to their open position and rotating the tool about the longitudinal axis of said first arm end; and

a hammer head mounted to a second one of said arm ends and facing in alignment with said common plane and perpendicular to its associated arm, whereby said arms

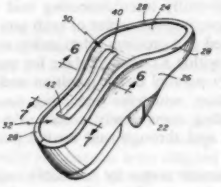
can be placed in the closed position and so that the arm ends opposite said hammer head collectively function as a handle to facilitate use of said tool as a hammer.

4,236,267
CANOE AND PADDLE SUPPORT
Michael Lewis, 2754 Hula Dr., Verona, Wis. 53593, and Allan L. Jenkins, 4018 Meyer Ave., Madison, Wis. 53711
Filed Mar. 12, 1979, Ser. No. 19,703
Int. Cl.³ B63B *17/00*
U.S. Cl. 9—1.7 **11 Claims**



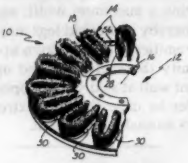
1. A canoe and paddle support for use in combination with a canoe having laterally extending thwarts and a canoe paddle having an extended handle to provide a support for carrying the canoe and the paddle, comprising a body having:
(a) a lateral slot adapted to receive and removably retain a thwart of the canoe,
(b) a longitudinal slot adapted to receive and removably retain the canoe paddle and having an approximately perpendicular orientation relative to the lateral slot, whereby the paddle may be held approximately longitudinal with respect to the center line of the canoe when the thwart is retained in the lateral slot, and
(c) a carrying surface facing downwardly and away from the canoe when the thwart is engaged in the lateral slot, the paddle is engaged in the longitudinal slot, and the canoe is inverted for carrying, whereby the carrying surface will provide a support surface for engagement by the shoulder of a person in supporting relation, and whereby the body will support the canoe on the shoulder of the person for carrying.

4,236,268
TECHNIQUE AND ARTICLES FOR FORMING SHOE SHANKS
Robert W. Bradley, Marblehead; Donald L. Bray, Beverly, and Raymond L. Peterson, Beverly Farms, all of Mass., assignors to Bush Universal, Inc., Woburn, Mass.
Division of Ser. No. 681,562, Apr. 29, 1976, Pat. No. 4,081,917.
This application Oct. 14, 1977, Ser. No. 842,242
Int. Cl.³ A43D *0/00*
U.S. Cl. 12—146 S **29 Claims**



1. A method for stiffening the shank region of the shoe insole comprising:
applying a shank strip to the insole, said shank strip including a flexible sleeve containing a flexible matrix of externally activatable thermosetting resin, said sleeve and matrix being flexible and deformable, as a unit, to enable the shank strip to be applied to the shank region of the insole and to substantially conform to the shank region of the insole while in an unactivated condition;
urging said shank strip into engagement with the shank region of the insole to cause the shank strip to substantially conform to the contour of the shank region of the insole; and
activating the resin in situ on the insole to form a reinforcing shoe shank.

4,236,269
VERTICAL AXIS BRUSH
Thomas S. Block, Muskegon, Mich., assignor to Clarke-Gravely Corporation, Muskegon, Mich.
Filed May 2, 1979, Ser. No. 35,393
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—180 **25 Claims**

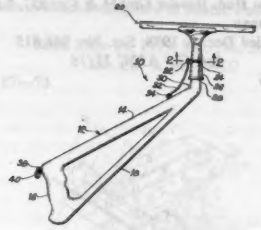


1. A segmented vertical axis brush for use with a floor treating machine, said brush comprising:
a brush holder plate having an integral peripherally extending, depending skirt, said plate further having a central, rotary axis;
a plurality of brush members, each brush member including a base element and a plurality of bristles held by said base element; and
mounting means circumferentially spaced around said central axis and on said brush holder plate and extending downwardly therefrom for radially receiving and detachably yet positively mounting said brush members to said plate in a snap fit fashion, each of said brush members when mounted, engaging an inner peripheral surface of said skirt and extending radially outwardly from said central rotary axis of said brush holder plate whereby said brush members may be mounted and removed from said plate without the use of tools.

4,236,270
WINDOW CLEANING DEVICE
Michael J. Mavis, P.O. Box 23331, San Diego, Calif. 92123
Filed Jul. 2, 1979, Ser. No. 54,144
Int. Cl.³ A47L *1/08*
U.S. Cl. 15—245 **1 Claim**

1. A squeegee assembly comprising a tubular handle section provided with a gripping portion integral therewith at one end thereof, said parts being angled in respect to each other; a tapered portion integral with the other end of the handle section, said tapered portion also being angled in respect to the handle section whereby the gripping portion and the tapered portion extend in substantially opposite directions in a substantially parallel space relationship to each other; a squeegee

rotatably mounted on the tapered portion; a slot cut transversally through a portion of the squeegee handle and a pin



mounted through the slot and slidably retained in an orifice in the tapered portion.

4,236,271

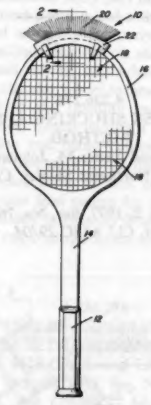
BRUSH ATTACHMENT FOR TENNIS RACKET

Ronald T. Martino, 5305 Ehrlich Rd., Tampa, Fla. 33624

Filed Apr. 17, 1979, Ser. No. 30,904

Int. Cl.³ A47L *25/00*; A63B *49/00*

U.S. Cl. 15—246 **3 Claims**



1. A brush attachment for tennis rackets comprising: a body portion formed from a resilient material for allowing said body portion to conform to the arcuate shape of a tennis racket bow; a plurality of bristles extending from said body portion; attachment means connected to said body for attaching said body to the bow of a tennis racket; wherein a longitudinally extending channel is formed in said body portion for partially surrounding a tennis racket bow when the body portion is held in engagement therewith, said channel being formed on the side of said body portion opposite that from which said bristles extend.

4,236,272

HINGE COMPRISING A COMPRESSION SPRING, WHICH IS ADAPTED TO BALANCE THE WEIGHT OF A HINGED LEAF

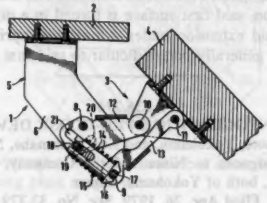
Wilhelm Gronbach, Dr. Fritz-Huber-Str.73, 8090 Wasserburg-/Inn, and Alfons Gnann, Max Redelstein-Str.30, 7955 Ochsenhausen, both of Fed. Rep. of Germany

Filed Jul. 25, 1978, Ser. No. 927,925

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1977, 2733927

Int. Cl.³ E05D *11/08, 11/10*

U.S. Cl. 16—142 **5 Claims**



1. A hinge for balancing the weight of a hinged leaf, such as a flap, lid or door, and for opposing a torque exerted on such leaf, said hinge comprising:

a stationary member having two limbs;

a moveable hinge member connected to the hinged leaf;

a control lever having a first portion pivotally connected to said stationary member and a second portion pivotally connected to said movable hinge member;

a first cam slot formed in said stationary member;

a second cam slot formed in said control lever and having a portion thereof overlapping said first cam slot during movement of said control lever;

a slidable pin mounted for movement in said cam slots;

spring means for balancing the weight of the hinged leaf comprisng a prestressed compression spring and a spring guide for said compression spring, said compression spring having one end bearing on said stationary member and one end bearing on said slidable pin, said spring guide having one end supported by said limbs of said stationary member and one end supported by said slidable pin; said first cam slot being shaped to control the force exerted by said compression spring, through said slidable pin and said control lever, on said movable hinge member.

4,236,273

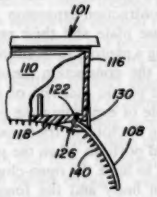
SPRING-LIKE HINGE

James A. McCaffrey, Norcross, Ga., assignor to Diversified Plastics Products Inc., Norcross, Ga.

Division of Ser. No. 885,314, Mar. 10, 1978, Pat. No. 4,143,800. This application Oct. 13, 1978, Ser. No. 951,127

Int. Cl.³ E05D *9/00*

U.S. Cl. 16—150 **7 Claims**



1. A hinge having spring-like activation comprising:

A. a first plastic surface constructed of a resilient flexible material;

B. a pair of prongs extending axially outwardly from opposite edges of said first surface near an end thereof;

C. a second surface;

D. bearing means for receiving said prongs such that said first surface can rotate with respect to said second surface; and

E. an extension integrally formed with said second surface, extending beyond an edge of said second surface and coplanar with said second surface, an edge of said extension being adapted to engage said first surface whereby, upon engagement of said first surface and said edge of said extension, said first surface is forced in a direction away from said extension under a maximum spring-like force applied generally perpendicular to said first surface.

4,236,274
PANTOGRAPHIC OPEN-CLOSE DEVICE

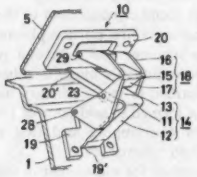
Kazuaki Omote, Yokohama, and Koji Watanabe, Niiza, both of Japan, assignors to Nissan Motor Company, Limited and Nifco Inc., both of Yokohama, Japan

Filed Apr. 26, 1979, Ser. No. 33,379

Claims priority, application Japan, Apr. 28, 1978, 53-56111[U]

Int. Cl.³ E05D *7/00*

U.S. Cl. 16—150 **7 Claims**



1. A plastic pantographic open-close device, comprising a first contraction-expansion piece formed of a pair of arms connected to each other through the medium of an elbow portion, a second contraction-expansion piece formed of a pair of arms connected to each other through the medium of an elbow portion, one of the arms of the first contraction-expansion piece and one of the arms of the second contraction-expansion piece pivotally fastened independently of each other and arranged in a crossing state, a first base plate secured to a main body containing an opening and connected one of the arms of the first contraction-expansion piece and one of the arms of the second contraction-expansion piece through the medium of respective connection means, a second base plate secured to an open-close member serving to open and close the opening of the main body and connected to the other arm of the first contraction-expansion piece and the other arm of the second contraction-expansion piece through the medium of respective connection means, the first contraction-expansion piece, the second contraction-expansion piece, the first base plate, the second base plate and their respective connection means jointly forming a pantographic mechanism, whereby the elbow portions and the connection means accumulate, from the resiliency of the plastic material of which the device is made, a force capable of expanding the pantographic mechanism notwithstanding the total of frictional force generated by the pivotally fastened portions when the pantographic mechanism is folded down to have the open-close member close the opening of the main body and the force thus accumulated serves to energize the pantographic mechanism in the direction of expansion when the open-close member is separated from the opening of the main body.

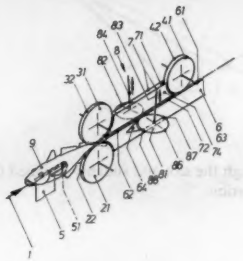
4,236,275
PROCESS FOR THE FILLETING OF FISH

Henri Westerdahl, Ronne, Denmark, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG, Lubeck, Fed. Rep. of Germany

Filed Dec. 6, 1978, Ser. No. 966,815

Int. Cl.³ A22C *25/16*

U.S. Cl. 17—46 **4 Claims**



1. A method of mechanically filleting unbeheaded fish, or beheaded fish with the collar bones still adhering to the body to be filleted, comprising the steps of conveying a fish with its tail end leading through a succession of cutting knives, performing belly filleting cuts, back filleting cuts and rib cuts on said fish, performing said rib cuts by rib knives which are displaceable in a direction perpendicular to their cutting planes, and thereafter severing the fillets from the fish by displacing said rib knives in a direction to cut the fish adjacent the collar bones and in a direction inclined towards the roof of the skull leaving the collar bone and/or the head on the remaining bone skeleton.

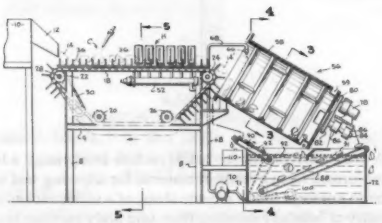
4,236,276
BIVALVE MOLLUSK SHUCKING APPARATUS AND METHOD

Robert Van Twuyver, and James M. Johnson, both of Ipswich, Mass., assignors to Northeast Shipley Company, Ltd., Ipswich, Mass.

Filed Feb. 3, 1977, Ser. No. 765,522

Int. Cl.³ A22C *29/04*

U.S. Cl. 17—48 **16 Claims**



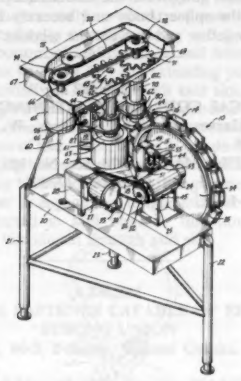
1. A system for effecting the opening of the shell of bivalve mollusks comprising means for applying liquid nitrogen to the external surface of the shell of a bivalve mollusk without freezing the flesh on the interior of the shell and heat applying means for immediately thereafter applying a high temperature media to the external surface of the shell.

4,236,277

CRUSTACEAN SHELLING APPARATUS

Norman A. Rudy, Bellingham, and Lloyd C. Fredrickson, Lindon, both of Wash., assignors to Amfac Foods, Inc., Portland, Oreg.

Filed May 14, 1979, Ser. No. 38,459
Int. Cl.³ A22C *29/02*
U.S. Cl. 17—73 **12 Claims**



1. A crustacean processing apparatus for separating the meat portion of a crustacean body part from the shell portion thereof, comprising:

first and second counterrotatable rollers having upright axes of rotation substantially parallel to one another; support means to which said rollers are mounted; roller drive means for driving said rollers in counterrotating directions, said rollers being contiguously positioned adjacent one another to thereby form a nip between said rollers wherein a crustacean body part may be grasped and separated into a meat portion and a shell portion;

a cupped wheel assembly for conveying crustacean body parts to a position centered on and immediately adjacent said nip of said rollers, said wheel assembly including a substantially circular wheel means and a plurality of cups attached thereto and opening radially outwardly therefrom, said wheel means having a substantially horizontal axis of rotation and being centered on said nip of said rollers; wheel assembly drive means operable to rotate said wheel means about its axis, and;

a pressurized water feed means for pushing said crustacean body parts radially outwardly from said cups and into said nip upon said cups being rotated to a position adjacent said nip.

4,236,278

PLANETARY COILER ESPECIALLY USEFUL FOR COILING TEXTILE STRAND MATERIAL

Donald L. Hoover, 4428 Coachwood La., Gastonia, N.C. 28052

Filed Oct. 10, 1978, Ser. No. 949,501
Int. Cl.³ B65H *54/80*
U.S. Cl. 19—159 R **14 Claims**

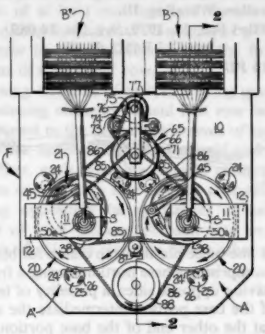
1. A planetary coiler for strand material comprising

a stabilizing plate member mounted for rotation about a fixed axis,

a coiler member rotatable about a predetermined axis in eccentric relation to said fixed axis of said stabilizing plate member,

means operably connected to said coiler member for imparting rotation thereto about said predetermined axis and for moving said coiler member in an orbital path substantially concentric with said axis of said stabilizing plate member, and

means mounting said coiler member in driving relation to said stabilizing plate member so that said coiler member drives said stabilizing plate member in rotation upon orbital movement of said coiler member about said axis of said stabilizing plate member.

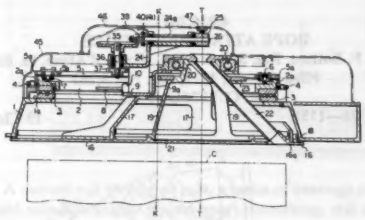


4,236,279

PLANETARY COILER

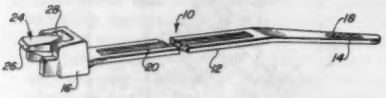
Kouichi Kawaura, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Dec. 20, 1978, Ser. No. 971,500
Claims priority, application Japan, Dec. 28, 1977, 52/159591; Jan. 6, 1978, 53/000776
Int. Cl.³ B65H *54/80*
U.S. Cl. 19—159 R **6 Claims**



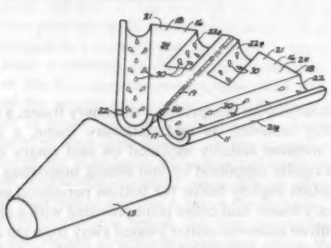
1. A planetary coiler comprising a stationary frame, a rotary disc rotatably mounted on said stationary frame, a sliding supporting member slidably mounted on said rotary disc, a coiler plate rigidly supported by said sliding supporting member at a position slightly below the bottom peripheral edge of said stationary frame, said coiler plate provided with a circular aperture with an eccentric center located away from the center of said coiler plate, a supporting element rotatably mounted on said sliding supporting member at a position below said sliding supporting member, a turn plate rigidly mounted on said supporting element at a position slidably engaging in said circular aperture of said coiler plate, a pair of calender rollers rotatably mounted on said sliding supporting member, said turn plate being provided with a silver guide tube, an annular gear having inner and outer teeth and being mounted on said rotary disc, planetary gear drive means engaged with said inner teeth of said annular gear and with a gear of said turn plate, transmission means for transmitting rotation of said annular gear to said calender roller, and drive means for rotating said rotary disc and annular gear.

4,236,280
RELEASABLE TIE
Walter J. Kreiseder, Kildeer, Ill., assignor to Courtesy Mold and Tool Corporation, Wheeling, Ill.
Filed Feb. 22, 1979, Ser. No. 14,069
Int. Cl.[3] B65D 63/00
U.S. Cl. 24—16 PB 10 Claims



1. A molded one-piece plastic strap clamp for binding members together comprising a base portion having a free end, said base portion having opposite sides, a plurality of teeth formed on one side of the base portion intermediate the ends, and a body formed at the other end of the base portion, said body having an opening therethrough for receiving said free end, said opening being transverse to the axis of the base portion, said free end being insertable into said opening in a locking direction and forming a loop to receive the members to be bound, with the plurality of teeth being on the side of the base portion away from the members to be bound, latch means on said body including a latch pivotally supported on said body and at least one lock tooth on said latch complementary to said teeth on said base portion and extending into said opening and adapted to engage with a tooth on said base portion for preventing movement of said base portion in a release direction, said latch formed integrally with said body and extending outwardly therefrom generally parallel to the base portion in the nonuse condition so as to be readily accessible by the user, said latch being deflected about its pivot line on the body to release the lock tooth from engagement with a selected tooth on the base portion to permit the base portion to be moved in said release direction, said base portion being easily releasable from the body and said strap clamp being reusable.

4,236,281
ROPE ATTACHING DEVICE
Charles F. Bottum, Rte. 3, Box 522-L, Coeur d'Alene, Id. 83814
Filed Jan. 22, 1979, Ser. No. 5,283
Int. Cl.[3] F16G 11/00
U.S. Cl. 24—115R 13 Claims



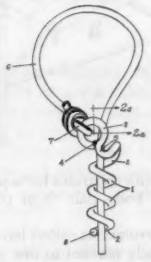
1. A rope attaching device, comprising: a rope splicer body extending from a front end to a rear end in which the body has a pair of symmetrical body sections with first complementary concave channels formed therein between the front end and the rear end defining a rope passageway through the body to receive a rope section therein when the two sections are placed together;

said pair of symmetrical sections having second complementary concave channels formed therein extending from the front and toward the rear end at a converging angle with respect to the first complementary concave channels to form a rope end receptacle to receive a rope end therein and form a rope loop between the rope end and the rope section forward of the front end when the two sections are placed together;

said rope splicer body comprising a plurality of pointed rope gripping elements projecting into the concave channels to penetrate the rope section and the rope end to firmly grip the rope section and the rope end in said channels; and

sheath means complementary to the exterior shape of the rope splicer body when the sections are placed together to encase the splicer body and securely hold the section firmly together and prevent the sections from separating.

4,236,282
HELICAL COIL ROPE FASTENING DEVICE
Howard F. Harvey, Jr., 416 Third Ave., W., Hendersonville, N.C. 28739
Filed May 18, 1978, Ser. No. 907,329
Int. Cl.[3] F16G 11/00
U.S. Cl. 24—132 C 3 Claims



1. A fastener for rope and the like comprising:

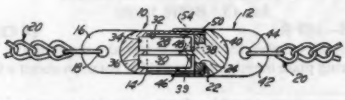
a plurality of aligned integrally joined coils extending around a common axis;

one side of a depression forming shoulder integral with one end of said integral coils;

a closed eye integral with the other side of said shoulder through which said rope is attached;

said coils having a spacing therebetween for receiving said rope after said rope has been extended through said coils along said common axis back around the outside of said coils, over said shoulder, and finally consecutively wrapped through said aligned coils securely fastening said rope.

4,236,283
COUPLING
Andre Marosy, 16249 Hilton, Southfield, Mich. 48075
Continuation-in-part of Ser. No. 905,514, May 15, 1978. This application Nov. 27, 1978, Ser. No. 963,979
Int. Cl.[2] A44B 17/00
U.S. Cl. 24—201 A 17 Claims



1. A coupling comprising a male and a female member, said male member comprising an end having a generally T-shaped member and said female member comprising a housing having a cavity closed by an end plate, a slot through said end plate accepting said T-shaped member of said male member, and spring bias means within said cavity urging said T-shaped

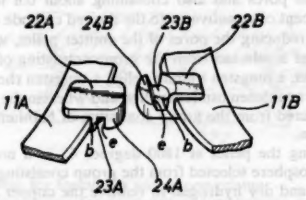
member in rotation relative to said slot for locking said T-shaped member in said cavity below said end plate out of registry with said slot, and a groove in the inner face of said end plate accepting a corresponding portion of said T-shaped member therein in relative position out of registry with said slot, wherein said T-shaped member comprises a substantially rectangular tongue member supported by a cylindrical base and the end plate of said female member comprises a circular aperture having a diameter slightly larger than the diameter of said cylindrical base, and wherein said spring bias means comprises a pair of substantially co-planar separate spring blades extending longitudinally in said housing and having an end fastened at the bottom of said cavity in said housing, each of said spring blades having a free end extending proximate said end plate substantially in registry with said slot, an inclined tapered camming surface at said spring blade free end facilitating introduction of said tongue member between said free ends and deflecting one of said spring blades in one direction and the other of said spring blades in an opposite direction for causing one of said spring blades to enage said tongue member on one side and the other to engage said tongue member on the other side when deflected in said opposite directions with said tongue member introduced through said slot.

4,236,284

SOLID SLIDE FASTENER CAPABLE OF EFFECTING STRONG UNION

Minoru Kamiya, 46-3, 2-chome, Minami Otsuka, Toshima-ku, Tokyo, Japan

Filed Mar. 15, 1978, Ser. No. 886,825
Claims priority, application Japan, Sep. 26, 1977, 52-115322
Int. Cl.³ A44B *19/06, 19/26*
U.S. Cl. 24—205.13 R **4 Claims**



1. A firm grip slide fastener comprising:

a first flexible tape and a second flexible tape generally co-planar with and in opposed relation to the first tape;

a plurality of independent rigid fastening elements secured to an edge of said first tape to form a first row of fastening elements;

a plurality of independent rigid fastening elements secured to an edge of said second tape to form a second row of fastening elements;

each fastening element of said first row having a head at an outer end thereof and a groove inwardly of said head, said groove opening in a first direction transverse to the plane of said first tape;

each fastening element of said second row having a head at an end thereof and a groove inwardly of the head, said groove opening in a second direction opposite to said first direction and transverse to the plane of said second tape;

said grooves of the fasteners of the first row receiving the heads of the fasteners of the second row, and said grooves of the fasteners of the second row receiving the heads of the fasteners of the first row to lock the rows together against separation by a pull exerted outwardly in the plane of said tapes;

slider means for interlocking said rows of fasteners, said slider means comprising

means for sequentially moving each element of one row with respect to opposed elements of the other row to a position in a plane parallel with and over-lapping the opposed element of the second row, by flexing at least one of said tapes,

means for locking said elements together by moving the element of at least one row in a direction toward and perpendicular to said parallel overlapping elements of the other row to lock the elements of the first row to the elements of the second row,

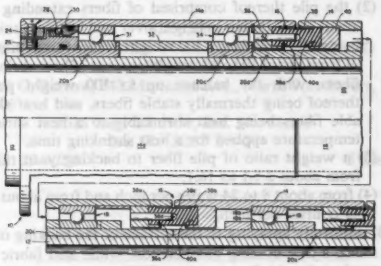
said fastening elements of each row being spaced apart, and said fastening elements of said first row being staggered with respect to the fastening elements of said second row so that the fastening elements of said rows interfit with each other, each fastening element comprising a pair of grooves one on each side of each element, said grooves defining oppositely facing flanges of said heads, the flanges of each element of each row engaging in the grooves of adjacent elements of the other row.

4,236,285

CURVED ROLL HAVING SEALED TORSIONAL COUPLING BETWEEN ROLL SECTIONS

James O. Gallant, Rehobeth, Mass., assignor to SW (Delaware), Inc., Providence, R.I.

Filed Jan. 13, 1978, Ser. No. 869,137
Int. Cl.³ D06C *3/06*
U.S. Cl. 26—103 **3 Claims**



1. A curved roll having an axle, a series of bearings received on said axle and axially spaced apart therealong, roll sections rotatably supported on said bearings, spacer means arranged along said axle extending between said bearings, and couplings joined between pairs of adjacent roll sections, said roll having the improvement comprising

A. means forming a circumferential channel within each coupled roll section and rotating with that roll section, said channel means being spaced from and axially facing a proximate axial end of the roll section,

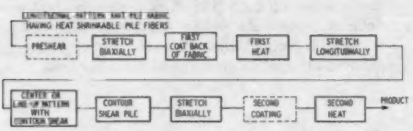
B. torque-transferring means within each coupled roll section and rotating with that roll section, said torque-transferring means axially projecting adjacent a proximate end of the roll section in the direction toward said end, and

C. a resiliently-flexible tubular coupling element axially spanning between two adjacent coupled roll sections, each said coupling element having a tubular central portion axially intermediate two tubular end portions and being seated and radially compressively engaged only at each said end portion within said circumferential channels on the two coupled roll sections and being in torque-transferring engagement with said torque-transferring means on the coupled roll sections.

4,236,286
MANUFACTURE OF KNITTED SYNTHETIC FUR FABRIC

Norman C. Abler, Menomonee Fall; Earlyn E. Zimmerman, Jefferson, and Wayne A. Swihart, Elkhorn, all of Wis., assignors to Borg Textile Corporation, Oak Brook, Ill.

Filed Jun. 1, 1978, Ser. No. 911,467
Int. Cl.³ D06C *23/00*
U.S. Cl. 28—160 **12 Claims**



1. A process for making a knitted pile fabric which has been contour sheared yet which has at least two different lengths of fibers in the pile thereof, said process comprising the steps of:

(A) tensioning both transversely and longitudinally a previously dimensionally unstabilized knitted pile starting fabric to an extent sufficient to expand the length thereof from 0 to about 30% and to change the width thereof from about −30% to +30%, said fabric being characterized by having:

(1) the backing thereof comprised of yarn having a denier ranging from about 150 to 600,

(2) the pile thereof comprised of fibers extending from about ¼ to 2 inches in height over said backing, said pile being comprised on a 100 weight percent total pile basis of from about 10 to 90 weight percent of heat shrinkable fibers, with the balance up to 100 weight percent thereof being thermally stable fibers, said heat shrinkable fibers being heat shrinkable to a heat shrinking temperature applied for a heat shrinking time,

(3) a weight ratio of pile fiber to backing yarn ranging from about 2.5:1 to 16:1,

(4) from about 8 to 24 wales per inch and from about 17 to 42 courses per inch,

(B) uniformly applying to the surface of the backing of said fabric a first coating composition, while said fabric is so tensioned, said first coating composition comprising an organic polymeric material which:

(1) has a glass transition temperature not above about 0° C.,

(2) is capable of bonding to said fabric after application to said backing thereof when such are heated together to a first temperature which is below said heat shrinking temperature,

(3) dimensionally stabilizes said fabric, after being heated to said first temperature for a time sufficient to achieve said bonding, to an extent sufficient to prevent said fabric from recovering from its so tensioned configuration beyond a predetermined transverse width, when said tensioning is subsequently removed,

(C) heating said coated fabric backing to said first temperature for a time sufficient to achieve said bonding while said fabric is so tensioned,

(D) removing said tensioning,

(E) simultaneously

(1) passing the resulting fabric longitudinally through a contour shearing zone extending transversely across said fabric with the pile side of said fabric being towards the contours of the shearing elements in said contour shearing zone, the transverse width of said contour shearing zone being equal to said predetermined transverse width, thereby to achieve predetermined contours in the pile of such said fabric,

(2) longitudinally tensioning and transversely aligning the respective so sheared contours of said fabric with said contour shearing zone to achieve a predetermined registration between contours in said contour shearing zone and said pile, thereby to achieve a predetermined relationship between such contour in the pile side of such fabric and such fibers in the pile side thereof, and

(3) contour shearing said pile of said resulting fabric, and

(F) simultaneously

(1) heating the so contour sheared fabric to a said heat shrinking temperature for said heat shrinking time,

(2) tensioning transversely and longitudinally said so contour sheared fabric to the respective extents defined above in step (A) for said heat shrinking time, and

(3) maintaining said contour sheared pile free from contact with any solid object for said heat shrinking time.

4,236,287
METHOD OF MAKING A RUGGEDIZED HIGH CURRENT DENSITY CATHODE

Bernard Smith, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 25, 1979, Ser. No. 51,934
Int. Cl.³ H01J *9/12*
U.S. Cl. 29—25.18 **9 Claims**

1. Method of making a high current density cathode capable of operating at current densities of $2A/cm^2$ to $30A/cm^2$ in the temperature range of 900 degrees C. to 1125 degrees C., said method including the steps of

A. machining a porous high purity pellet containing copper in its pores and also containing about 0.6 to 2 weight percent of an activator to the desired cathode shape without reducing the pores of the emitter pellet, wherein said pellet is selected from the group consisting of a tungsten pellet, a tungsten iridium pellet, a tungsten rhenium pellet and a tungsten osmium pellet, and wherein the activator is selected from the group consisting of hafnium and zirconium,

B. firing the pellet at 1800 degrees C. in a non-oxidizing atmosphere selected from the group consisting of an inert gas and dry hydrogen to remove the copper filler material,

C. impregnating the pellet with $Ba_5Sr(WO_6)_2$ at about 1900 degrees C. in a dry inert gas atmosphere, wherein said $Ba_5Sr(WO_6)_2$ impregnant is made by mixing stoichiometric amounts of barium carbonate, strontium carbonate, and tungsten trioxide according to the equation $5BaCO_3+SrCO_3+2WO_3 \rightarrow Ba_5Sr(WO_6)_2+6CO_2$, ball milling the mixture overnight, and then firing in an air oven at 1475 degrees C. for 2 hours, and

D. firing the impregnated emitter in a dry hydrogen atmosphere at about 1840 degrees C. for about 2.5 to 5 minutes.

4,236,288
METHOD OF FABRICATING HEAT TRANSFER CONDUITS

Peter Rohner, Isernhagen, Fed. Rep. of Germany, assignor to Kabel-und Metallwerke Gutehoffnungshuette AG, Fed. Rep. of Germany

Filed Jul. 16, 1979, Ser. No. 57,706
Int. Cl.³ F28D *15/00*; B21D *53/02*; F25B *15/00*
U.S. Cl. 29—157.3 H **3 Claims**

1. A method of fabricating a plurality of heat transfer conduits comprising the steps of:

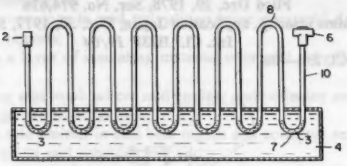
evacuating an elongated metal pipe;

inserting a predetermined quantity of heat transfer fluid within such evacuated pipe, and providing airtight seals at the opposite ends thereof;

further comprising the steps of:

winding the elongated sealed pipe to form vertical convolutions;

heating the lower vertical portions of such convolutions so that the liquid phase of the heat transfer fluid is redistributed in a predetermined manner in said lower vertical portions; and



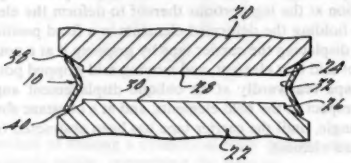
providing vacuum-tight seals between adjacent convolutions of said metal pipe in at least selected upper vertical portions of said convolutions.

4,236,289

APPARATUS AND METHOD FOR FABRICATING PULLEYS

William G. Oldford, Lexington, Mich., assignor to Huron Tool & Manufacturing Division of U.S. Industries, Inc., Lexington, Mich.

Division of Ser. No. 813,165, Jul. 5, 1977, Pat. No. 4,138,776. This application Jan. 22, 1979, Ser. No. 5,167
Int. Cl.³ B21K *1/42*
U.S. Cl. 29—159 R **5 Claims**



1. Apparatus for forming a pulley comprising:

first forming means for receiving and supporting a circumferential edge portion of a cylindrical pulley rim blank;

second forming means axially opposed to said first forming means for engaging another circumferential edge portion of said pulley rim blank;

said first and second forming means being generally cylindrical and having an annular shoulder portion on an axially opposed end thereof to engage and accurately locate the interior surface of said rim blank with respect to said forming means; and

said first and second forming means being relatively movable along the axis of said pulley rim blank so as to cause said circumferential edge portions to be convergingly deformed.

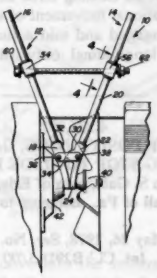
4,236,290

FAN PULLER

Billie J. McPherson, P.O. Box 597, Medina, Tenn. 38355

Filed Feb. 27, 1979, Ser. No. 15,734
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—239 **1 Claim**

1. A tool for exerting a force between two elements mounted on a common shaft, said tool comprising: a first lever having a handle portion and a head portion; a second lever having a handle portion and a head portion; and hinge means for hingedly connecting said first lever to said second lever in opposed, spaced relation allowing limited longitudinal movement of said first lever with respect to said second lever; said hinge means including at least one longitudinally extending connector plate which extends between and is pivotally mounted to each of said first and second levers and a cam lobe mounted on one of said first and second levers for contacting the other of said first and second levers, said cam lobe being positioned between the said pivotal mounts of said lontitudinally extending connector plate; further wherein each of said heads includes a bifurcated tip for contacting and partially surrounding said shaft, each of said bifurcated tips extending laterally of its respective lever, said bifurcated tips being thereby positioned in a mutually diverging relationship; and a mechanical advantage means extending between the handle portions of said levers for providing a mechanism for causing displacement of said levers, said mechanical advantage means including a threaded bar extending through each end of said handle portions and a complementary threaded nut attached to each end of said bar.

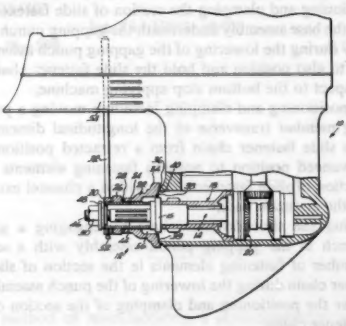


4,236,291

BEARING CARRIER PULLER FOR OUTBOARD MOTORS

Randall G. Barrow, 343 Marianna Ave., North Fort Myers, Fla. 33903

Filed Aug. 20, 1979, Ser. No. 68,149
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—256 **5 Claims**



1. A bearing carrier puller for use in removing a bearing carrier in assembly with a propeller shaft and reverse gear from a chamber in a lower unit of a housing of a motor such as an outboard motor, the bearing carrier puller comprising a block having an inner end for seated engagement over an existing annular mouth opening from the chamber in general axial alignment with a through hole in said block, an exteriorly threaded annular sleeve extending loosely axially through said through hole and being of a length to extend from a first end for seated engagement against an existing thrust hub portion of the propeller shaft to a second end terminating a predeter-

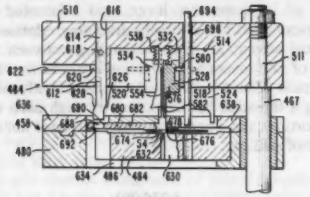
mined distance short of a terminal end of a screw threaded end portion of an existing propeller carrying portion of the shaft extending therethrough, whereby a washer and lock nut may be engaged on the threaded end to clamp said sleeve against the thrust hub; an actuating nut, screw threaded on said sleeve outwardly of an outer end of said block, a ring, slip fitted over said threaded sleeve outwardly of said nut, means to fix said ring to said sleeve, and an elongated member fixed to and extending generally outwardly from said ring and being of a length so as to abut an existing fixed housing portion of the motor to arrest rotational movement of said sleeve when said means to fix are engaged and said actuating nut is properly turned to impart longitudinal outward movement to said sleeve.

4,236,292

METHOD OF POSITIONING, GAPPING AND APPLYING STOP TO SLIDE FASTENER

David A. Orr; Hiren S. Gala, both of Erie, and George J. Scagnelli, Meadville, all of Pa., assignors to Textron Inc., Providence, R.I.

Filed May 26, 1978, Ser. No. 909,863
Int. Cl.³ B29D *5/00*
U.S. Cl. 29—408 **5 Claims**



1. A method of gapping and applying a bottom stop to a section of a slide fastener chain comprising

advancing the section of slide fastener chain into a common base assembly extending beneath both a bottom stop applying machine and a gapping punch assembly which is adjacent to the bottom stop applying machine,

lowering the gapping punch assembly,

positioning and clamping the section of slide fastener chain in the base assembly underneath the gapping punch assembly during the lowering of the gapping punch assembly so as to also position and hold the slide fastener chain with respect to the bottom stop applying machine,

said positioning and clamping including moving a positioning member transverse to the longitudinal dimension of the slide fastener chain from a retracted position to an advanced position to position fastening elements of the section of slide fastener chain within a channel extending in the common base,

gapping the slide fastener chain by engaging a gapping punch in the gapping punch assembly with a selected number of fastening elements in the section of slide fastener chain during the lowering of the punch assembly but after the positioning and clamping of the section of slide fastener chain,

applying a bottom stop to the section of slide fastener chain after the positioning and clamping of the section of slide fastener chain,

raising the gapping punch assembly,

retracting the positioning member after the gapping and applying a bottom stop,

removing the section of slide fastener chain from the base assembly after the gapping and the applying of the bottom stop, and

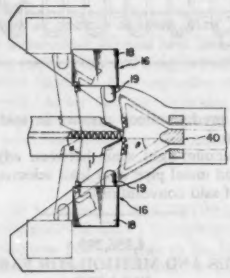
said retracting of the positioning member permitting the bottom stop to pass freely over the channel.

4,236,293

METHOD AND APPARATUS FOR FORMING SPACE SECTIONS IN A SLIDE FASTENER

Toyoo Morita, and Hiroshi Oura, both of Kurobe, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 29, 1978, Ser. No. 974,616
Claims priority, application Japan, Dec. 30, 1977, 52/158063
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—408 **9 Claims**



1. A method for forming a space section in a slide fastener having plastic interlocking elements with leg portions fixedly secured to a carrier tape, the elements in the prospective space section including a first element next to an element ahead of it, and a last element next to an element behind it, said method comprising:

(a) pressing the elements within the prospective space section at the leg portions thereof to deform the elements;

(b) holding the deformed elements in a fixed position; and

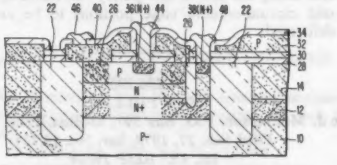
(c) displacing the carrier tape by gripping it at a point ahead of said first element, and moving said gripped point of the tape rearwardly at an oblique displacement angle with respect to the held elements, and at a constant abstracting angle, until the carrier tape has been abstracted from said last element.

4,236,294

HIGH PERFORMANCE BIPOLAR DEVICE AND METHOD FOR MAKING SAME

Narasipur G. Anantha, Hopewell Junction; Harsaran S. Bhatia, Wappingers Falls, and James L. Walsh, Hyde Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 844,769, Oct. 25, 1977, Pat. No. 4,160,991.
This application Mar. 16, 1979, Ser. No. 21,124
Int. Cl.³ B01J *17/00*
U.S. Cl. 29—578 **11 Claims**



1. A method for fabricating a high performance semiconductor device with small emitter-base spacing comprising:

providing a silicon semiconductor body having regions of monocrystalline silicon isolated from one another by isolation regions;

forming a base region in certain of said regions which contain a subcollector region;

providing a mask over said body covering those regions designated to be the emitter and collector reach-through regions;

forming a doped polysilicon layer through said mask wherein the said polysilicon layer makes ohmic contact to said base region;

forming openings in said polysilicon layer over said designated regions;

forming a layer of insulating material over said polysilicon layer;

removing said mask where said emitter and collector reach-through are to be formed;

forming said emitter in said base region and collector reach-through to said subcollector; and

forming electrical contacts to said emitter and collector reach-through regions, and said polycrystalline silicon layer being the electrical contact to said base region.

4,236,295

METHOD OF MAKING ROTOR COIL OF CORELESS MOTOR

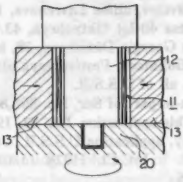
Yoshimitsu Nakamura, Settsu, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 11, 1978, Ser. No. 904,866

Claims priority, application Japan, May 18, 1977, 52-57873

Int. Cl.³ H02K *15/02*

U.S. Cl. 29—598 **1 Claim**



1. A method of making a cylindrical rotor coil for use in a coreless electric motor, comprising the steps of

forming a substantially cylindrical coil from an insulation coated conductive wire, and applying pressure to said cylindrical coil in radial directions against at least one of the inner and outer peripheries of said coil while maintaining flat die surfaces in abutting relationship with both axial ends of said coil, to generally flatten the portions of said wire defining said peripheries and to radially compress together the turns of said coil for reducing the radial thickness of said coil, wherein at least one of said flat die surfaces comprises a filing die having file teeth at least in an area abutting said one axial end of said cylindrical coil and said exposing step comprises moving the filing die along said one axial end of the coil after said force applying step so as to grind off at least the insulating coating of said wire on said one axial end of the coil.

4,236,296

ETCH METHOD OF CLEAVING SEMICONDUCTOR DIODE LASER WAFERS

Geoffrey R. Woolhouse, White Plains, N.Y.; Harold A. Huggins, Hartsdale, N.Y.; Stephen I. Anderson, Yorktown Heights, N.Y., and Frederick R. Scholl, Riverdale, N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 13, 1978, Ser. No. 951,074

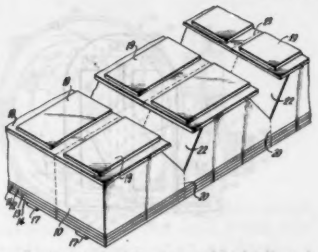
Int. Cl.³ B01J *17/00*

U.S. Cl. 29—569L **12 Claims**

6. A method of cleaving a wafer into bars of diodes, said wafer comprising a substrate, at least a portion of which is metallized, and a plurality of semiconductor layers deposited on at least a portion of the opposite surface, at least one of which layers, when appropriately biased, generates coherent electromagnetic radiation, which method comprises:

(a) forming an array of exposed lines on the metallized substrate by photolithography to locate lasing ends of the devices;

(b) etching through the exposed metallized portion to expose portions of the underlying substrate;



(c) etching a V-groove into the substrate at the exposed portions to a depth of about 1 to 2 mils less than the thickness of the wafer; said V-groove terminating at a point before reaching the said one layer and

(d) mechanically cleaving the wafer including the said one layer along the etched V-grooves to form bars of diodes, thereby generating substantially damage-free lasing facets along the plane of cleaving, the bars of diodes being of substantially equal width.

4,236,297

METHOD OF MANUFACTURING A SUPERCONDUCTOR

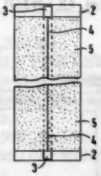
Peter Lanig, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 18, 1978, Ser. No. 925,797

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734410

Int. Cl.³ H01L *39/24*

U.S. Cl. 29—599 **8 Claims**



1. A method of manufacturing a superconductor with at least one strand of a superconductive compound which is formed from at least two components, comprising:

(a) winding an intermediate conductor product with these components on a winding core;

(b) separately winding a coherent graphite structure as a separator at least between adjacent surface parts of said intermediate conductor product;

(c) subsequently thereto, performing a heat treatment for forming the superconductive compound; and

(d) finally, unwinding the superconducting body so produced from the winding core for further processing.

4,236,298

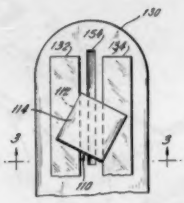
METHOD OF TRIMMING THERMISTOR OR OTHER ELECTRICAL COMPONENTS AND THE CONTACTS THEREOF

Milton Schonberger, 195 Fern St., Westwood, N.J. 07675

Continuation-in-part of Ser. No. 879,193, Feb. 21, 1978, abandoned. This application Jan. 25, 1979, Ser. No. 6,362

Int. Cl.³ H01C *17/22*

U.S. Cl. 29—610R **23 Claims**



1. A method of forming contacts on a surface of an electric component, comprising the steps of:

forming a through gap in a substrate;

providing an electric component having a layer of contact material extending over a surface thereof; applying the electric component to the substrate such that a portion of the surface of the layer of contact material is placed over the substrate gap, with the layer of contact material extending across the entire width of the gap;

operating through the gap, from the side of the substrate away from the electric component, removing the part of the layer of contact material over the gap from the electric component, thereby dividing the layer of contact material into two parts to form two separated contacts.

4,236,299

METHOD AND DEVICE FOR WINDING SPIRAL FINS ONTO OVAL TUBING

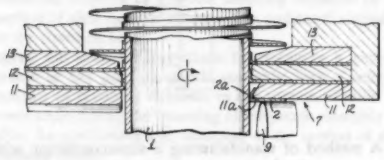
Alfred Joekel, Essen-Werden; Hans Langen, and Peter Denner, both of Ratingen, all of Fed. Rep. of Germany, assignors to Balke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Division of Ser. No. 569,887, Apr. 21, 1975, Pat. No. 4,107,832, which is a continuation-in-part of Ser. No. 451,589, Mar. 15, 1974, abandoned. This application Jul. 10, 1978, Ser. No. 923,169

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1973, 2313436; Jul. 31, 1974, 2436768

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—727 **16 Claims**



1. A device for the production of finned heat transfer tubing of oval cross section, designed for winding a continuous strip of sheet metal onto a length of oval tubing having a major diameter which is at least fifty percent larger than its minor diameter, in order to form a continuous spiral fin thereon, the device comprising in combination:

means for journalling and rotating said length of oval tubing about its longitudinal axis;

means for supplying to at least one winding point on the circumference of said tubing, in a transverse tangential direction thereto, a continuous strip of ductile sheet metal having an on-edge height which is at least ten times greater than its gauge;

means for shaping said metal strip, or strips, respectively, prior to arrival at the winding point, into a hook-like cross-sectional profile, so as to give the metal strip a contact edge with a laterally extending flange portion which is bent substantially more than 90 degrees, to form an acute angle with the remainder of the strip;

starting attachment means defined between the tubing and the metal strip for transmitting the rotary motion of the tubing to the strip as a winding and feeding motion;

means for axially advancing said winding point or points, respectively, relative to the rotating tubing, in a fixed relationship to said rotary motion, so as to wind the metal strip or strips into a spiral fin enveloping the tubing;

means for axially and radially guiding the arriving metal strip or strips, respectively, at the associated winding point in an on-edge relationship to the surface of the tubing, by guidingly engaging both sides of the strip as well as the outwardly open groove formed by said laterally extending flange portion; and

means for ironing said flange portion of the metal strip against the tubing surface, following bending of the strip around the surface curvature.

4,236,300

ARMATURE WINDING MACHINE

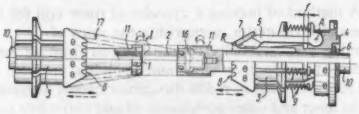
Viktor M. Kartavtsev, ulitsa Lavreneva, 17, kv. 71; Grigory Y. Posleider, ulitsa 40 let Oktyabrya, 43/2, kv. 9; Vladimir S. Bytsak, ulitsa Georgia Dimitrova, 28, kv. 71, all of Kherson, and Pavel I. Bukhteev, Festivalnaya ulitsa, 13, korpus 3, kv. 233, Moscow, all of U.S.S.R.

Continuation-in-part of Ser. No. 806,859, Jun. 15, 1977, abandoned. This application Jan. 31, 1979, Ser. No. 8,077

Claims priority, application U.S.S.R., Jun. 15, 1976, 2363454

Int. Cl.³ H02K *15/09*

U.S. Cl. 29—736 **2 Claims**



1. A winding machine for the manufacture of an armature winding for an electrical machine on an armature core having a longitudinal axis, opposed butt ends, and armature slots extending between said butt ends, comprising:

drive means including a driving shaft;

a device actuated by said drive means comprising a chuck for clamping the armature core;

a conductor installing mechanism actuated by said drive means and comprising two moving heads, said heads being arranged coaxially at opposite butt ends of said armature core: means for imparting a reciprocating motion to said heads along the axis of the armature core; each of said heads having a shell with a central bore and a circular radial groove on the side facing a corresponding butt end of said armature core;

a plurality of levers each having a rounded working part for installing the conductor, said levers being accommodated within said circular radial groove;

a bushing corresponding to each head for positioning said lever with respect to the armature slots, said bushing being slidably mounted for movement within said central bore of said shell of the head and in engagement with said drive shaft, said bushing having a tapered surface;

a tapered ring affixed to said tapered surface with radial butt end slots facing said armature core, surfaces of the butt

end slots being in alignment with the working surfaces of said levers; and

a device disposed between said armature core and said heads of said conductor installing mechanism for distributing the conductors among the respective armature slots and shaping the end winding parts thereof adjoining said butt ends of said armature core.

4,236,301

APPARATUS FOR MOUNTING DEVICES ON A SUBSTRATE

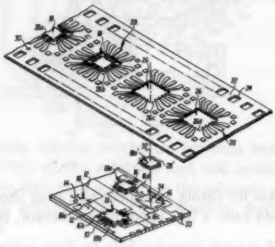
Joseph Hug, Ormesson; Pierre Sigel, Villeneuve-le-Roi; Raymond Delorme, Bagnolet; Maurice DeVoille, Sevran, and Henri Grosjean, Le Plessis Trevise, all of France, assignors to Compagnie Internationale pour l'Informatique, Paris, France

Division of Ser. No. 874,652, Feb. 2, 1978. This application Dec. 4, 1978, Ser. No. 966,318

Claims priority, application France, Feb. 4, 1977, 77 03271

Int. Cl.[3] B23P *21/00, 23/00*

U.S. Cl. 29—740 **17 Claims**



1. Apparatus for mounting a plurality of devices onto a substrate, each of the devices being characterized within a first plurality of types according to its function and within a second plurality of categories in accordance with its dimensions, the substrate having a plurality of predetermined positions each for receiving a device of selected type and category, the devices being carried by and transported to the substrate by a flexible supporting element, said apparatus comprising:

a chassis,

a first plurality of cutting tools mounted on said chassis, each for cutting a device from its support element;

a second plurality of attaching tools mounted on said chassis, each for attaching a device to a preselected position of the substrate;

said first plurality of cutting tools and second plurality of attaching tools being arranged on said chassis with respect to a first reference line;

means on said chassis for conveying devices of each type to a corresponding cutting tool and devices of each category to a corresponding attaching tool;

a movable table on said chassis having a plate for supporting the substrate;

moving means for moving said table and said plate with respect to said first reference line; and

control means operably connected to said moving means, said cutting tools and said attaching tools for controlling said moving means to move said table and said plate so as to be correctly positioned with respect to a corresponding one of said cutting tools and a corresponding one of said attaching tools, and for actuating said corresponding one cutting tool and said corresponding one attaching tool when the preselected position of the substrate is accurately aligned with respect to each of said corresponding one cutting tool and said corresponding one attaching tool.

4,236,302

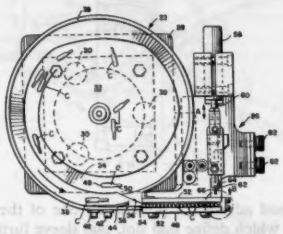
ELECTRICAL CONTACT FEEDING AND ATTACHMENT APPARATUS

Guenter Kuehling, Berwyn, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Aug. 25, 1978, Ser. No. 936,956

Int. Cl.[3] H01R *43/04*

U.S. Cl. 29—753 **31 Claims**



1. A crimping machine for selectively feeding electrical contacts of any one of a variety of contact conformations seriatim from a supply of said contacts and crimping each fed contact to the terminal end of an electrical conductor, comprising:

a base;

receptacle means on said base for holding the supply of contacts of selected conformation in an array of loose contacts;

crimping means, including a crimping station, for crimping at least a portion of a contact onto the electrical conductor when the contact is at the crimping station;

feeding means for selectively feeding a random oriented contact from said receptacle means along a path to the crimping means;

interchangeable modular orienting and advancing means, including a common support structure, located along said path between the receptacle means and the crimping means for receiving the randomly fed contacts, orienting the contacts and advancing the contacts one at a time toward the crimping means; and

means mounting the common support structure of said modular orienting and advancing means on said base for ready removal therefrom whereby the entire modular orienting and advancing means is bodily removable and interchangeable for accommodating the variety of contact conformations.

4,236,303

WIRE UNWRAP ASSEMBLY FOR USE ON AUTOMATIC WIRING MACHINES

George J. Sprenkle, Phoenixville, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 2, 1979, Ser. No. 54,271

Int. Cl.[3] B21F *21/00;* **B23P** *19/04*

U.S. Cl. 29—762 **9 Claims**

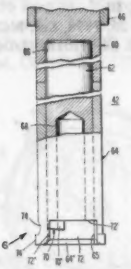
1. A wire unwrap assembly for use on an automatic wiring machine for unwrapping a wire coil from a post, which includes an unwrap tool comprising:

a tool holder having an aperture at one extremity thereof,

a tip having one of its extremities rigidly fixed within the tool holder aperture and having a bore of predetermined depth terminating at its other extremity, said tip including a coplanar tooth-like member projecting from the surface of the last mentioned extremity,

a tool sleeve for partially enclosing said tip, the inner surface of said tool sleeve being contiguous with the outer surface of said tip, one extremity of said sleeve extending beyond said tip and providing a counterbore, said sleeve having a slot in a side wall thereof, said slot extending from the

outermost surface of said one extremity of said sleeve to the point at which said tooth-like member of said tip is exposed within said slot, said tooth-like member being



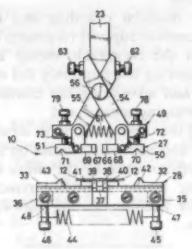
disposed adjacent a preselected one of the longitudinal walls which define said slot, said sleeve further including a generally transverse-oriented tapered groove in its surface in proximity to said tooth-like member.

4,236,304

DEVICE FOR SPREADING APART A PAIR OF TAPES

Toyoo Morita, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 29, 1978, Ser. No. 974,612
Claims priority, application Japan, Dec. 30, 1977, 52/158064
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—768 **10 Claims**



1. A device for spreading a pair of stringer tapes apart at an element-free gap, comprising:

(a) a frame having a table for supporting thereon the pair of tapes along a longitudinal path;

(b) a pair of first grip members slidably mounted on said table and movable away from each other in a direction transverse to said path, and adapted to engage one side of the tapes at the element-free gap, respectively;

(c) a shaft movably supported on said frame and drivable toward said first grip members;

(d) a pair of second grip members operatively coupled with said shaft and facing said first grip members for engaging the other side of the tapes at the element free gap respectively, said second grip members being movable away from each other along said direction; and

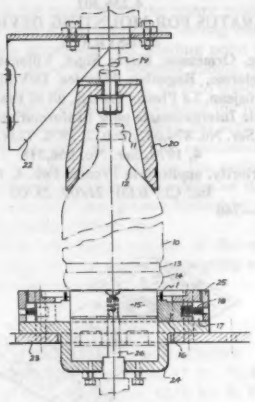
(e) means on said shaft for converting the motion of said shaft toward said table into the motion of said second grip members away from each other along said direction while said second grip members are pressed against said first grip members with the pair of tapes held therebetween.

4,236,305

APPARATUS FOR FITTING A RESILIENT RING ON A BOTTLE

Ross W. Hetherington, Heathcote; Kenneth J. Armstrong, Bexley; Leonard Ireland, Mullaloo; John Canty, Kareela, and Ernest R. Banfield, Peakhurst, all of Australia, assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 26, 1978, Ser. No. 900,533
Int. Cl.³ B23P *21/00*
U.S. Cl. 29—774 **6 Claims**



1. Apparatus for fitting a resilient ring over shoulder means of a bottle and onto a bail band indent thereof, the apparatus comprising:

(a) support means for supporting the resilient ring in a fitting position,

(b) locating means for receiving and locating the resilient ring and the bottle in axially aligned juxtaposition to each other,

(c) ram means for press fitting the ring over the shoulder means by relative displacement of the bottle and the support means with the ring thereon,

(d) the support means having biasing means for radially inwardly biasing the support means and the support means being formed and positioned for engaging the shoulder means of the bottle under the biasing of the biasing means while the support means supports the ring as it is deformed to pass over the shoulder means and onto the bail band indent,

(e) said locating means comprising a displaceable circular platform for supporting the bottle and normally extending upwardly within and above the support means, the ram means being operable to engage the bottle at a location remote from its shoulder for displacing the bottle downwardly while supported on the downwardly displaceable platform.

4,236,306

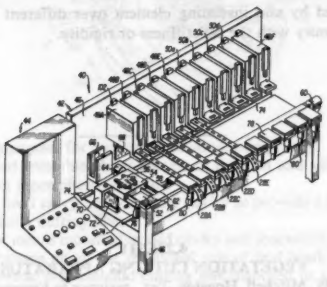
METHOD FOR MOUNTING DEVICES ON A SUBSTRATE

Joseph Hug, Ormesson; Pierre Sigel, Villeneuve-le-Roi; Raymond Delorme, Bagnolet; Maurice DeVoille, Sevran, and Henri Grosjean, Le Plessis Trevise, all of France, assignors to Compagnie Internationale pour l'Informatique, Paris, France

Filed Feb. 2, 1978, Ser. No. 874,652
Claims priority, application France, Feb. 4, 1977, 77 03271
Int. Cl.³ B23P *21/00, 23/00*
U.S. Cl. 29—827 **14 Claims**

1. A method of automatically mounting on a supporting substrate, integrated circuit devices of different types and categories having external conductors, said method comprising the steps of:

(A) defining a first reference system on the substrate, said first reference system including a plurality of positions, at which the devices are to be attached to the substrate;
(B) selecting an appropriate device to be attached at each of said plurality of positions;
(C) disposing said devices at different stations wherein at each station the devices are connected to a supporting element through their external conductors;
(D) defining a second reference system independent of said first reference system, said second reference system including a plurality of stations at which the devices are disposed before they are mounted upon the substrate;



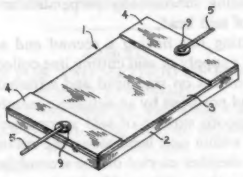
(E) imparting relative movement between said first reference system of the substrate and said second reference system to align each position on the substrate with a corresponding station and a corresponding device disposed thereon;
(F) separating each of said selected device from its said supporting element at the corresponding station and disposing it on said substrate at said appropriate position; and
(G) attaching each device to the substrate at the position to which the device has been aligned.

4,236,307

METHOD OF MAKING A NITROGEN DIOXIDE SENSING ELEMENT

Jeannine O. Colla, Whitefish Bay, and Paul E. Thoma, Burlington, both of Wis., assignors to Johnson Controls Inc., Milwaukee, Wis.

Division of Ser. No. 774,765, Mar. 7, 1977, Pat. No. 4,142,400. This application Nov. 2, 1978, Ser. No. 956,884
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—857 **15 Claims**



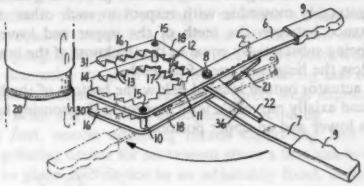
1. A method of making an element capable of sensing the presence of nitrogen dioxide in the environment, comprising the steps of heating a film of an electrically non-conductive polyaromatic polymer to a temperature in the range of 540° C. to 750° C. in a non-oxidizng atmosphere to pyrolyze the polymer and render said polymer semi-conductive, and attaching electrical leads at spaced locations to said pyrolyzed film.

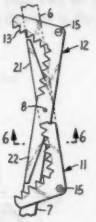
4,236,308

SELF-CLEANING TREE GIRDLING DEVICE

Edric W. Vredenburg, Sr., P.O. Box 135, Fortine, Mont. 59918

Filed May 23, 1979, Ser. No. 41,600
Int. Cl.³ A01G *3/03*
U.S. Cl. 30—121 **2 Claims**





1. A tree girdling device having a pair of dual levers hingeably connected together by a hinge located intermediate the ends of said dual levers, each dual lever having a pair of levers in spaced relation with each other and connected together by a connecting means and having a handle at one end of one lever of each pair of levers for moving said dual levers about the hinge, said levers having their other ends formed with tree encircling elements, each tree encircling element having a first portion continuing the lever with a second terminal portion extending at approximately 90° to the first portion and toward an opposite like portion on the other lever, each of the portions having cutter elements to cut the bark of a tree, the other lever of each pair of levers having a rearwardly extending portion having a length less than the distance between said connecting means and said hinge, the rearwardly extending portion of one dual lever being movable between the spaced levers of the other dual lever to remove any material held between the spaced levers of said dual levers.

4,236,309

FLEXIBLE LINE TRIMMER WITH LINE FEEDING APPARATUS

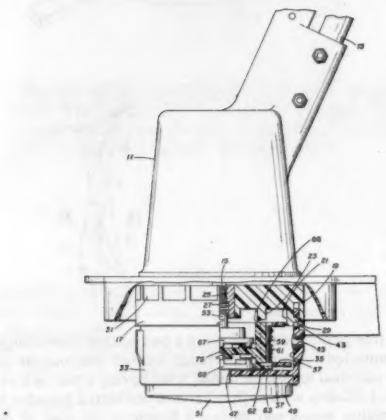
James S. Cayou, Hurst, Tex., assignor to K & S Industries, Inc., Fort Worth, Tex.

Filed Feb. 27, 1978, Ser. No. 881,174
Int. Cl.³ A01D *50/00*
U.S. Cl. 30—276 **10 Claims**

1. An apparatus for cutting vegetation with a rotating non-metallic flexible line comprising:
a rotary drive means for rotating a free end of the line;
a housing having a bottom and connected with the rotary drive means for rotation therewith;
a spool hub carried inside the housing at the bottom;
a spool adapted to be wound with the line and carried by the hub for rotational movement therewith;
an outer gear, positioned inside the hub, having an upper ring with downwardly facing teeth and spaces therebetween, and a lower ring connected to the upper ring for movement therewith, having teeth facing upward with spaces therebetween, the teeth of the lower ring being in the same vertical planes as the teeth of the upper ring;

an inner gear, positioned between the upper and lower rings, having upper teeth and spaces therebetween on its upper side adapted to engage the teeth of the upper ring, and lower teeth and spaces therebetween on its lower side adapted to engage the teeth of the lower ring, each upper tooth being formed above one of the spaces on the lower side; the inner gear and the outer gear being axially and rotatably moveable with respect to each other; the distance between the teeth of the upper and lower rings being substantially equal to the thickness of the inner gear less the height of one of its teeth;

an actuator button located below the bottom of the housing and axially moveable with respect to the housing between a lower and an upper position;



an actuator member bearing against the button and extending through the bottom of the housing into contact with one of the gears for axially moving one of the gears with respect to the other gear when the button is moved from its lower position, thereby removing the upper teeth of the inner gear from engagement with the teeth of the upper ring to allow the gears to rotate with respect to each other until the lower teeth of the inner gear engage the teeth of the lower ring; and

bias means for urging the actuator member downward, causing the lower teeth of the inner gear to disengage the teeth of the lower ring, allowing rotation of the gears with respect to each other until the upper teeth of the inner gear again engage the teeth of the upper ring.

4,236,310

PORTABLE WORKING IMPLEMENT

Erich Müller, Waiblingen, Fed. Rep. of Germany, assignor to Andreas Stihl, Waillengen, Fed. Rep. of Germany

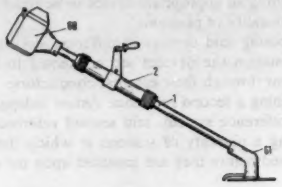
Filed Sep. 25, 1978, Ser. No. 945,635

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1977, 2743043

Int. Cl.[3] A01D *55/18*; B27B *17/02*

U.S. Cl. 30—276 **19 Claims**

1. A portable working implement for agriculture and forestry, especially brush cutter, which is provided with a handle intermediate its ends and includes: a cutting tool connected to one end of said implement, a motor drivingly connected to said cutting tool, a first implement part subjected to vibrations caused by the working of said motor, a second implement part arranged at the side of said handle and connected to said first implement part through the interposition of at least one elastic insulating element, and adjusting means associated with said insulating element for adjusting the rigidity characteristic of said insulating element, said insulating element being fastened on said first implement part and on said second implement part, and an abutment part surrounding said insulating element and



engaged by said insulating element over different lengths in conformity with the set stiffness or rigidity.

4,236,311

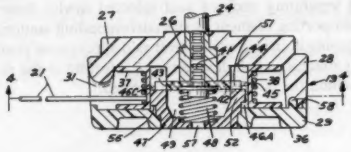
VEGETATION CUTTING APPARATUS

Albert W. Mitchell, Houston, Tex., assignor to Emerson Electric Company, St. Louis, Mich.

Continuation-in-part of Ser. No. 802,211, May 31, 1977, abandoned. This application Jan. 5, 1979, Ser. No. 1,109

Int. Cl.[3] A01D *50/00*

U.S. Cl. 30—276 **17 Claims**



1. An apparatus for cutting vegetation, comprising:

(a) a circular head rotatable about an axis of rotation with a drive connection extending from a first face and a second face having a smooth surface free of projections and recesses capable of trapping appreciable vegetation and said second face in contact with vegetation being cut;

(b) a spool carried by said head between said first and second faces and mounted for rotation independently thereof;

(c) a flexible non-metallic cutting line having a first end extending radially outwardly of said head into a cutting plane residing substantially perpendicular to the axis of rotation of said head;

(d) said cutting line having a second end secured to said spool and a supply of said cutting line coiled on said spool;

(e) locking means on said head and adjusted between first and second positions by an actuating member conforming to said smooth surface of said second face and moving coaxially within said head along the rotational axis, said actuating member carried on the second face of said head for rotation therewith, said locking means in a first position securing said spool against rotation relative to said head and in a second position releasing said spool to rotate freely through a predetermined angular displacement and thereby extend a certain length of cutting line from said head into the cutting plane whereat said locking means are returned to the first position; and

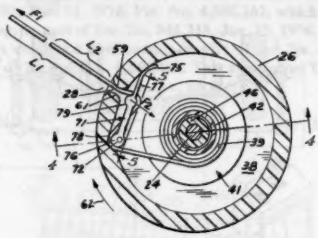
(f) and said actuating member is a button movable manually axially within said second face of said head.

4,236,312

APPARATUS FOR CUTTING VEGETATION

Gary H. Foster, and Marco H. Lombard, both of Houston, Tex., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 16, 1979, Ser. No. 12,628
Int. Cl.³ A01D *55/18*; A01G *3/06*
U.S. Cl. 30—276 **4 Claims**



1. An apparatus for cutting vegetation, comprising:
(a) a head rotatable about an axis of rotation and said head having a peripheral aperture;
(b) said head carrying an annular cavity to provide a storage area for a cutting line;
(c) spool means mounted in said cavity and journaled therein for rotation about the rotational axis of said head;
(d) a flexible non-metallic cutting line disposed in a coiled portion about said spool means with one end secured thereto and with a free end of said cutting line extending radially outwardly through said aperture into a cutting plane;
(e) a cam lock carried by said head adjacent said aperture and adapted for movement toward an abutment on said head in response to centrifugal force, said cutting line extending between said cam lock and said abutment and secured against extension into the cutting plane during rotation of said head at a first angular velocity, said cam lock provided by an elongated cam member having an opening therethrough and partially encircled by said cutting line passing through said opening for extension through said aperture into the cutting plane, and said abutment is a curved surface whereby said cutting line is secured in a curved portion against slidable movement therebetween;
(f) biasing means connected to said cam lock for separating said cam lock and abutment by a force acting counterdirectionally to centrifugal force; and
(g) said cam lock and said biasing means cofunctioning during rotation of said head at any angular velocity greater than the first angular velocity whereby said cutting line upon any significant wear or loss at its free end is extended immediately from said head to the predetermined maximum length in said free end traversing the cutting plane during head rotation.

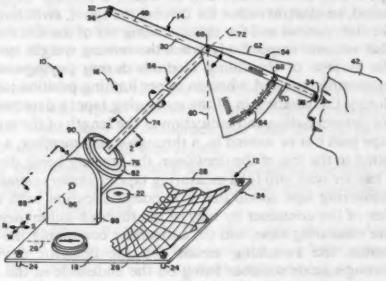
4,236,313

APPARATUS FOR AND METHOD OF EVALUATING SOLAR EXPOSURE

Roy N. Griffin, Jr., 466 Knoll Dr., Los Altos, Calif. 94022

Filed Dec. 26, 1979, Ser. No. 107,448
Int. Cl.³ G01C *1/00*
U.S. Cl. 33—1 DD **12 Claims**

1. An apparatus for use in determining the amount of direct solar exposure at a particular point between sunrise and sunset for different points in any one of a number of different geographic locations, for any day of the year, said apparatus comprising:
(a) a support base including means for maintaining the base at a required fixed orientation relative to its surroundings for the particular point selected;
(b) means including indicia contained on and displayed by said support base for conveying the necessary information to provide said specific orientation;
(c) an elongated solar pointing device adapted for placement in a pointing position with the sun; and
(d) an arrangement connected with said base for supporting said pointing device for movement in its solar pointing position at any time during movement of the sun from sunrise to sunset and so long as said base is maintained at its required orientation regardless of the point selected, the geographic location or the time of the year, whereby to determine the path taken by the sun during said movement and therefore the amount of direct solar exposure of the point selected, said arrangement including
(i) first, season adjusting means supporting said solar pointing device for movement about a first axis in order to place said device in an adjustably fixed, season related position relative to said axis depending upon the day of year, said season adjusting means including indicia setting forth the months of the year and an indexing mark in order to place the pointing device in the desired season related position,



(ii) second, time adjusting means supporting said solar pointing device and said season adjusting means for movement about a second axis in order to place said device in an adjustably fixed, time related position relative to said second axis, depending on the time of day between sunrise and sunset, said time adjusting means including indicia setting forth the different hours of the day between sunrise and sunset and an indexing mark in order to place the pointing device in the desired time related position, and
(iii) third, latitude adjusting means supporting said solar pointing device, said season adjusting means and said time adjusting means for movement about a third axis in order to place said device in an adjustably fixed, latitude related position relative to said third axis depending upon the latitude of the geographic location of the selected point, said latitude adjusting means including indicia setting forth latitude and an indexing mark in order to place the pointing device at the appropriate latitude and indicia contained on and displayed by said base for conveying the necessary information to provide the appropriate latitude.

4,236,314
ELECTROMECHANICAL FILLING-LEVEL MEASUREMENT

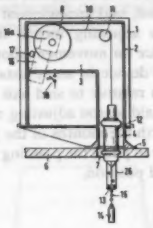
Klaus Schmidt, Schopfheim, and Klaus Grass, Murg, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

Filed Sep. 29, 1978, Ser. No. 947,105

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 7730802[U]; Oct. 5, 1977, 7730819[U]

Int. Cl.³ G01B 3/10

U.S. Cl. 33—126.6 **13 Claims**



1. In an electromechanical filling level measuring apparatus for the intermittent measurement of the filling level in a container including a spool, a measuring tape that is wound on the spool and to the lower end of which a sensing weight is secured, an electric motor for driving the spool, switching means for the reversal and for the switching off of the electric motor that respond respectively when the sensing weight encounters the surface of the filling medium during paying-out of the measuring tape and when an upper limiting position is reached during the winding-in of the measuring tape, a detector device for determination and indication of the length of the measuring tape paid out or wound in, a through-guide member, a housing fitted to the top of the container, the housing being divided by a barrier wall into (a) a measuring tape chamber containing the measuring tape spool, that is in communication with the interior of the container by way of the through-guide member for the measuring tape, and (b) a chamber containing the electric motor, the switching means and the detector device, the through-guide member being on the underside of the housing and including a fixed guide sleeve, a tube through which the measuring tape passes and a spring, the tube being mounted for limited vertical movement against the force of the spring, and a carrier for the tube being fastened to the end of the measuring tape, the improvement wherein the tube consists of metal and extends out of the upper end of the guide sleeve into the measuring tape chamber and an inductive proximity switch so arranged within the range of movement of the metal tube as to respond to its passage.

4,236,315
SENSOR ASSEMBLY FOR WHEEL ALIGNMENT SYSTEM

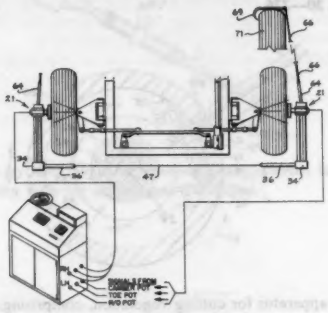
Donald B. Curchod, Saratoga, and Wilhelm Borner, Cupertino, both of Calif., assignors to Nortron Corporation, Sunnyvale, Calif.

Filed Sep. 13, 1978, Ser. No. 941,756

Int. Cl.³ G01B 7/315

U.S. Cl. 33—203.18 **5 Claims**

1. In a wheel alignment system of a type having a transducer support assembly, means carrying said assembly from a wheel to be aligned and serving to permit the wheel to rotate on its axis independently of said assembly and sensing means serving to provide an electrical indication of the angle of toe of the wheel, said sensing means comprising elongate means carried by and disposed to extend forwardly alongside the wheel to a position beyond the leading portion of a tire carried by said wheel, a potentiometer carried at the distal end of said elongate means, an elongate lever arm coupled at one end to move the wiper of said potentiometer, said lever arm being movable between advanced and retracted positions to vary the output of said potentiometer, and means serving to yieldingly apply tension to the distal end of said lever arm for operating said wiper to provide an electric signal representative of the angle between said lever arm and said elongate means in response to



steering movements of said wheel said lever arm being readily flexible for movement in a vertical plane while being substantially rigid in a generally horizontal plane for operating said wiper, the flexibility of said lever arm serving to isolate movements of the distal end of said lever arm from the proximal end thereof as the wheel is rotated.

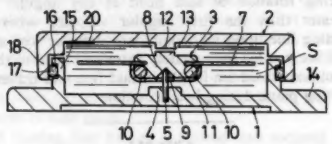
4,236,316
VESSEL ADAPTABLE TO THE EXPANSION AND/OR CONTRACTION OF FLUID THEREIN

Kazuo Suzuki, 9-9 Tamagawa 4 chome, Setagaya-ku Tokyo, Japan

Filed Jul. 6, 1979, Ser. No. 55,282

Int. Cl.³ G01C 17/08

U.S. Cl. 33—364 **3 Claims**



1. A magnetic needle assembly including a vessel comprised of a body and a lid and a needle member characterized in that said vessel body is a hollow body open at one end, said lid slidably interfits with said body to close said one end forming a chamber, a fluid within said chamber, said needle member being immersed in said fluid, a rectangular packing groove formed on the peripheral surface of one of the interfitting surfaces of the lid and the vessel body, an O-ring in said packing groove compressed by the peripheral surface of the other of said interfitting surfaces to seal said chamber, said vessel being capable of varying the volume of said chamber by displacement of said lid to accommodate expansion and contraction of said fluid.

4,236,317

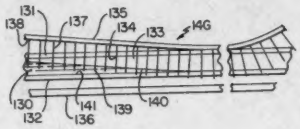
METHOD AND APPARATUS FOR ELECTROSTATICALLY FORMING A LAYER OF MATERIAL FROM A SLURRY THEREOF

James T. Candor, 5440 Cynthia La., Dayton, Ohio 45429

Continuation-in-part of Ser. No. 849,097, Nov. 7, 1977, Pat. No. 4,189,845, which is a continuation-in-part of Ser. No. 809,945, Jun. 24, 1977, Pat. No. 4,135,307, which is a division of Ser. No. 695,092, Jun. 11, 1976, Pat. No. 4,050,162, which is a continuation-in-part of Ser. No. 541,218, Jan. 15, 1976, Pat. No. 3,977,937, which is a continuation-in-part of Ser. No. 405,023, Oct. 10, 1973, Pat. No. 4,060,449. This application Oct. 16, 1979, Ser. No. 85,216

Int. Cl.[3] F26B *3/34*

U.S. Cl. 34—1 18 Claims



1. In a method of forming a layer of material against one side of a movable conveying means from a slurry of a liquid and said material by an electrostatic action, the improvement comprising the steps of disposing a plurality of needle-like projections in said slurry to assist said electrostatic action in forming said layer of material from said slurry against said conveying means, and causing said projections to always completely project through said layer as said layer is being formed against said one side of said conveying means to the desired thickness thereof.

4,236,318

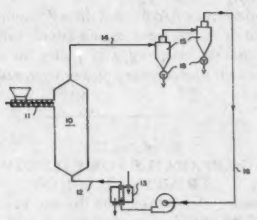
METHODS AND APPARATUS FOR HEATING PARTICULATE MATERIAL

Harold Heard, and Charles R. Wilt, Jr., both of Pittsburgh, Pa., assignors to Salem Corporation, Pittsburgh, Pa.

Filed Mar. 13, 1979, Ser. No. 20,168

Int. Cl.[3] F26B *3/08, 3/10*

U.S. Cl. 34—10 8 Claims



1. The method of heating and drying a solid particulate material comprising the steps of:

(a) delivering a solid particulate material to be heated to a fluidizing or heating chamber;

(b) fluidizing and heating said solid particulate material with an upwardly flowing stream of oxygen-free gas at a temperature sufficient to raise the temperature of the particulate material to a preselected level and at a flow rate sufficient to fluidize and/or transport the particulate material;

(c) removing said heated particulate material from the fluidized bed or transport stream;

(d) reheating the oxygen-free gas in a heat exchanger; and

(e) recycling said oxygen-free gas into said fluidizing chamber whereby solid particulate material is continuously fluidized, heated and transported out of said fluidized bed.

4,236,319

WARP SHEET SPLITTING DEVICE FOR A DRYING CHAMBER IN A YARN SIZING PROCESS

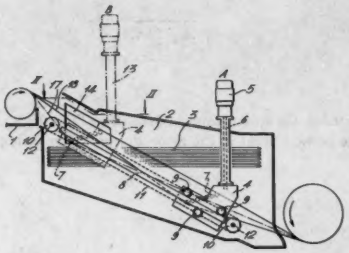
Keith R. Gillespy, Bolton, England, assignor to Platt Saco Lowell Limited, England

Filed May 31, 1978, Ser. No. 911,656

Claims priority, application United Kingdom, Jun. 2, 1977, 23332/77

Int. Cl.[3] F26B *7/00*

U.S. Cl. 34—12 9 Claims



1. Apparatus for drying a warp sheet of yarns in a sizing process, including

a drying chamber through which the warp sheet may be passed so as to be acted upon by a drying medium, said chamber having a first spacial region substantially devoid of any drying medium and a second spacial region for containing a drying medium,

a condenser within said chamber intermediate said first and second spacial region whereby drying medium from said second region may be condensed and thus be prevented from migrating to said first region,

a warp splitting device within said chamber comprising a carriage and a plurality of warp splitting bars insertable into said carriage, and

carriage traversing means for traversing said carriage between said first region, whereat said bars may be inserted into said carriage in safety to split said warp sheet into sheets of lesser density while in isolation from said drying medium, and said second region, whereat said drying medium may effect drying of said split warp sheets.

4,236,320

METHOD AND APPARATUS FOR CONDITIONING AND DRYING LAUNDRY

Karl Schwadike, Leverkusen; Dieter Meyer, Düsseldorf, and Rolf Puchta, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed May 23, 1979, Ser. No. 41,698

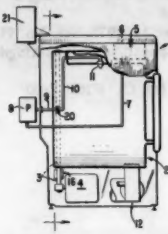
Claims priority, application Fed. Rep. of Germany, May 29, 1978, 2823351

Int. Cl.[3] F26B *3/04;* D06B *1/02*

U.S. Cl. 34—19 13 Claims

1. A method for simultaneously conditioning and drying laundry in an automatic clothes drier wherein a liquid conditioner is sprayed from a storage vessel onto laundry in the drum of the drier during a drying process comprising alternating moving and standstill phases, the liquid conditioner being

sprayed during at least a part of standstill phases from a nozzle arranged inside the drum and rotating with the drum and



directed to the spatial center of the drum, and the nozzle being at the highest point of the drum during the spraying.

4,236,321

DRYING CHAMBER

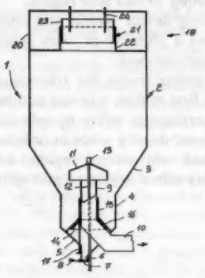
Carlo Palmonari, Via Grimaldi, 5, and Gabriele Gavioli, Via Panigale, 6, both of Bologna, Italy

Filed Apr. 16, 1979, Ser. No. 30,595

Claims priority, application Italy, Apr. 19, 1978, 3397 A/78

Int. Cl.³ F26B *17/10*

U.S. Cl. 34—57 E **3 Claims**



1. A drying apparatus for the production of dry material from a liquid suspension thereof comprising a cylindrical drying chamber with vertical axis and having a lower frusto-conical portion tapering downwards to a coaxial cylindrical portion, a conical portion extending downwards from said cylindrical portion and provided with a discharge door, an exhaust flue axially extending through said frusto-conical and cylindrical portion and having an upper inlet opening above which a hood element is arranged, a pipe for supplying the liquid suspension axially extending through said flue and hood element and communicating with an injector vertically positionable above said hood element, an annular chamber arranged above the cylindrical chamber and coaxially thereto and having an outer cylindrical wall with an opening for tangential connection of an air inlet and an inner cylindrical wall consisting of a fixed part and a movable part telescopically guided inside said fixed part to define an adjustable air passage between said movable part and the top of said annular chamber, the apparatus further comprising valve means arranged at said opening for gradually controlling the air flow therethrough.

4,236,322

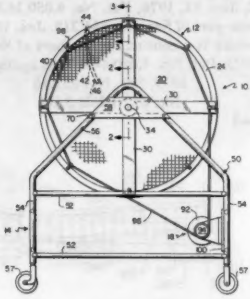
APPARATUS FOR AND METHOD OF DRYING ITEMS BY OPEN AIR AND SOLAR ENERGY

Allen M. Hastings, 4700 Fawnwood Cove, Austin, Tex. 78735

Filed Mar. 15, 1979, Ser. No. 20,720

Int. Cl.³ F26B *11/02, 17/24*

U.S. Cl. 34—130 **7 Claims**



1. A clothes dryer which empolys open air and solar energy for tumble drying clothes comprising

a rota' , closed drum for receiving clothes having first and .ond end surfaces and a lateral surface, each of said first and second end surfaces and said lateral surface having a plurality of orifices for permitting open air and solar energy to enter and moisture to exit said drum to dry the clothes, and having access door means attached to said drum and movable between open and closed positions for permitting access to the interior of said drum;

frame means on which said drum is mounted for exposing said drum to open air and solar energy;

bearing means coupled to said drum and said frame for rotatably supporting said drum on said frame for rotation about a rotational axis; and

driving means coupled to said frame and said drum for rotating said drum, said driving means having

a motor having a pulley coupled thereto and driven thereby,

belt guide means fixedly and directly coupled to one end of said drum adjacent to said lateral surface, and

a belt directly coupling said pulley to said belt guide means to transmit rotary power from said motor to said drum.

4,236,323

HEATING APPARATUS FOR FALSE TWIST YARN CRIMPING MACHINE

Peter Dammann, Remscheid, and Benno Frank, Wuppertal-Elberfeld, both of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 88,088

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1979, 2933087

Int. Cl.³ F26B *13/02*

U.S. Cl. 34—152 **17 Claims**

1. A yarn heating apparatus for use in a false twist yarn crimping machine or the like and comprising

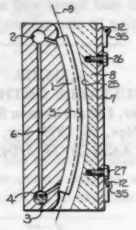
a heat insulating housing having a front face and an elongate channel in said front face, said channel having a generally U-shaped cross-sectional configuration which defines a bottom wall and opposite, generally parallel side walls,

an elongate heater plate disposed along said bottom wall in said channel so as to be in spaced relation from said front face of said housing,

heating means operatively connected to said heater plate for elevating the temperature thereof,

an elongate cover including an insert, said insert having a length conforming to the length of said channel and having a generally rectangular cross-sectional configuration and parallel side edges which are spaced apart a distance which closely approaches the distance between said side walls of said channel,

means mounting said cover to said housing for movement between a closed position wherein said insert is disposed



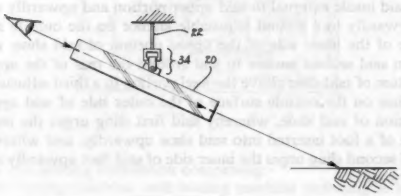
within said channel, and an open position spaced from said housing, said mounting means including hinge means for sequentially guiding said cover for movement within a plane parallel to said side walls of said channel to withdraw said insert from said channel and then guiding the cover for movement in a lateral direction when said cover is moved from said closed to said open position, and for moving said cover in a reverse sequence of like movements when the same is moved from said open to said closed position.

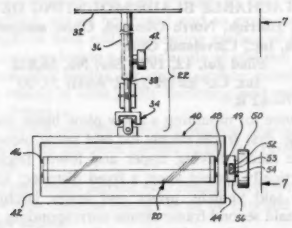
4,236,324

AIRCRAFT GLIDE PATH TEACHING AID

Roy Jones, 661 W. Park Ave., Chandler, Ariz. 85224

Filed Jul. 10, 1978, Ser. No. 922,985
Int. Cl.³ G09B 9/08
U.S. Cl. 434–35 **3 Claims**





1. A teaching aid for teaching student pilots to maintain an aircraft on a predetermined glide path during letdown for a landing, said teaching aid comprising:

a. a sight tube for viewing the point of landing along a glide path angle, said sight tube comprising a tube having a rectangular cross-section and cross hairs for defining the predetermined glide path angle to indicate any vertical deviation of the aircraft off the predetermined glide path and wherein a cross hair of said cross hairs is disposed at each end of said sight tube;

b. a suspension member for supporting said sight tube in the forward line of vision of the student pilot, said suspension means including:

i. opposed end pieces;

ii. shaft means for supporting said sight tube from said end pieces;

iii. knob means for pivotally repositioning said sight tube about a horizontal axis of the aircraft and with respect to said suspension member; and

iv. means for indicating the degree of pivotal repositioning of said sight tube with respect to horizontal, said indicating means including indicia and a shroud having a window for uncovering one of said indicia in response to rotation of said knob;

c. angle adjustment means for setting said sight tube at an angle with respect to horizontal, which angle is commensurate with a predetermined glide path angle; and

d. means for adjusting the height of said sight tube commensurate with the eye level of the student pilot;

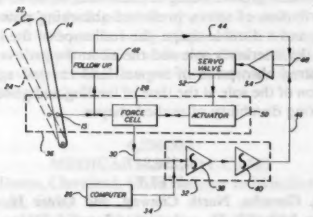
whereby, deviation of the aircraft off the glide path is immediately visually apparent to the student pilot.

4,236,325

SIMULATOR CONTROL LOADING INERTIA COMPENSATOR

John D. Hall, Johnson City, and Alfred S. Williams, Jr., Binghamton, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,428
Int. Cl.³ G09B 9/08
U.S. Cl. 434–45 **2 Claims**



1. In a simulator control loading system which includes a control member, a control member actuator, linkage elements therebetween, a force cell for providing a control force signal substantially representative of the total forces on the control member and including the mechanical inertia effects of the linkage elements, command means for providing a command signal representative of desired control member forces for realistic control member performance simulation, and summing means for summing said control force signal and said command signal to produce a difference signal representative of their difference for use in deriving a drive signal for actuating the actuator to produce said desired control member forces in said control member, an improvement for canceling the effect of the mechanical inertia of the linkage elements, comprising the following additional apparatus:

(a) sensing means connected to the linkage elements for producing a movement signal representative of their movement;

(b) conversion means responsive to said sensing means for converting said movement signal into an inertial force signal representative of the linkage element inertial force portion of the total forces on the control member;

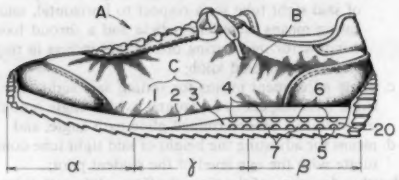
(c) combining means for combining said inertial force signal with the control force signal such that said inertial force signal is subtracted from the control force signal from said force cell to thereby cancel the inertial effect of the linkage elements.

4,236,326

SPORT SHOE SOLE

Masanobu Inohara, Akashi, Japan, assignor to Asics Corporation, Kobe, Japan

Filed Apr. 14, 1978, Ser. No. 896,477
Int. Cl.³ A43B *13/20, 21/28*
U.S. Cl. 36—29 **2 Claims**



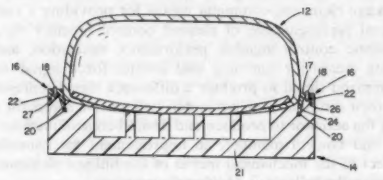
1. A sole for use with sport shoes comprising a rigid abrasion-resistant ground sole, the ground sole having a heel portion, an arch portion, and a toe portion, a resilient and elastic interlayer body bonded to said ground sole, and a resilient and elastic interlayer sole bonded to said interlayer body, said interlayer body being extended over and bonded to the heel portion and the shoe arch portion of the ground sole and having uniform thickness at the heel portion and decreasing into a wedge shape toward the top of the shoe arch portion, the interlayer body being provided with a plurality of parallel, transversely extending grooves on the surface of said interlayer body from its one side to its opposite side, the cross section of each groove being semicircular so as to have uniform distribution of stress, preferred absorbing power of impact load, and a durable shape, the resilience of the interlayer body and the interlayer sole and the air in the grooves permitting preferred absorption of impact load exerted against the heel portion of the sole at the time of landing and good restoration and long durability of arched shapes.

4,236,327

WELT

Robert D. Gorsche, North Conway, and Oscar H. Cloutier, Madison, both of N.H., assignors to Jones & Vining, Incorporated, Braintree, Mass.

Filed Feb. 28, 1979, Ser. No. 16,290
Int. Cl.³ A43C *13/08;* **A43B** *13/04*
U.S. Cl. 36—14 **13 Claims**



1. A unit sole construction, comprising

a sole body of molded, rubbery material, having a central top surface for receipt of an upper and a peripheral top surface for receipt of a welt, and

a welt extending along the perimeter of said body, said welt comprising

an exposed upper wall portion arranged to cover said peripheral top surface of said sole, and

a tongue portion extending from said wall portion into said body,

a tongue being embedded in said body so as to be wholly surrounded by said rubbery material to secure said welt thereto prior to attachment of said upper to said surface,

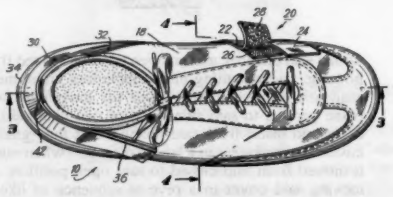
said welt being free of encroachment onto said central top surface of said sole, so as to avoid reduction of bonding area between said upper and said sole, said welt being free of stitching to said upper.

4,236,328

SHOE WITH ADJUSTABLE ORTHOPEDIC APPLIANCE

Bruce W. Friedlander, 129 Joralemon St., Brooklyn, N.Y. 11201

Filed Nov. 16, 1979, Ser. No. 94,964
Int. Cl.³ A43B *23/28, 5/04;* **A61F** *13/06*
U.S. Cl. 36—58.5 **4 Claims**



1. A shoe with adjustable orthopedic appliance which comprises a shoe, said shoe having a sole portion, a heel portion, an insole and an upper portion, a first adjustable length sling on the outside surface of the inner side of the upper portion of said shoe, said first sling extending external to said upper portion from approximately the center of said insole, and upwardly to a first adjustable anchor on the front part of said upper portion of said shoe, and a second adjustable length sling on the outside surface of the inner and outer sides of the upper portion of said shoe, said second sling extending from proximately the center of said insole external to said upper portion and upwardly and rearwardly to a second adjustable anchor on the outside surface of the inner side of the upper portion of said shoe, and from said second anchor to and around the rear of the upper portion of said shoe above the heel portion to a third adjustable anchor on the outside surface of the outer side of said upper portion of said shoe, whereby said first sling urges the inner side of a foot inserted into said shoe upwardly, and whereby said second sling urges the inner side of said foot upwardly and rearwardly.

4,236,329

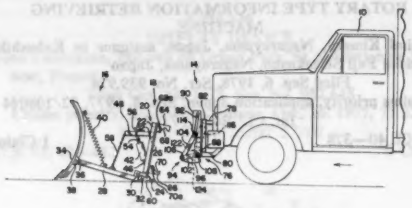
DETACHABLE BLADE MOUNTING DEVICE

Vernon L. Hetrick, North Olmsted, Ohio, assignor to Meyer Products, Inc., Cleveland, Ohio

Filed Jul. 12, 1979, Ser. No. 56,823
Int. Cl.³ E01H *5/08;* **A01B** *51/00*
U.S. Cl. 37—42 R **19 Claims**

1. A device for mounting a snow plow blade onto a vehicle comprising: first frame means for said snow plow blade, said first frame means having upper and lower latching surface means vertically spaced apart a fixed distance; second frame means on said vehicle, upper and lower latching member means on said second frame means corresponding respectively to said upper and lower latching surface means; means including toggle linkage means supporting one of said latching member means for displacement between latched and unlatched positions relative to said second frame means, said upper and lower latching member means in said unlatched position being spaced apart a distance less than said fixed distance and in said latched position engaging the corresponding latching surface

means, said toggle linkage means having an over-center position with respect to said upper and lower latching member means when said one latching member means is in said latched position, means for moving said toggle linkage means to displace said one latching member means between said latched and unlatched positions, and means for maintaining said toggle linkage means in said over-center position when said one latching member means is displaced to said latched position.



4,236,330

IRONING INSTALLATION AND METHOD OF OPERATING THE SAME

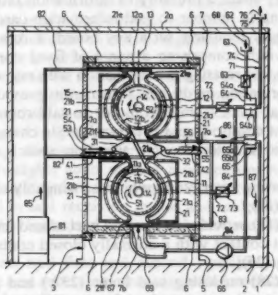
Robert Theiler, L'Oree du bois, 68360 Soultz, France

Filed Jan. 18, 1979, Ser. No. 4,738

Claims priority, application Switzerland, Jan. 24, 1978, 723780/78

Int. Cl.[2] D06F *69/02*

U.S. Cl. 38—8 **7 Claims**



1. An ironing installation comprising:

an ironing machine, said ironing machine including at least one rotatably mounted roll, a pair of heating elements having heating surfaces cooperating with said at least one rotatably mounted roll and serving to heat the textile pieces which are to be ironed and to press such textile pieces against such roll, the heating surface of each heating element enclosing a sector angle of said roll of at least 120°, said roll having an outer surface provided with holes, a casing at least partly enclosing said roll and said heating elements;

a suction device provided with a suction line operatively associated with the outer surface of the roll provided with said holes;

a first heat exchanger having two passageways for two flow media whose thermal energy is to be exposed to a heat exchange action;

an air infeed line;

one of said two passageways of said heat exchanger defining a first passageway forming part of said air infeed line;

said air infeed line containing an air inlet, a pump and at least one outlet mouth;

said outlet mouth opening into the casing of the ironing machine at the neighborhood of the roll and the heating element; and

the other passageway of the heat exchanger being incorporated into the suction line.

4,236,331

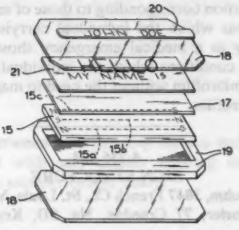
MAGNETIC BADGE ASSEMBLY

Ralph W. Mattson, 511 Walnut St., Batavia, Ill. 60510

Filed Nov. 24, 1978, Ser. No. 963,448

Int. Cl.[3] A44C *3/00*

U.S. Cl. 40—1.5 **12 Claims**



1. A self-adhering badge assembly, comprising:

a pair of separable substantially flat badge panels adapted to be placed in face-to-face clamping assembly alignment with a selected area of an article of clothing clamped between the panels and thereby supporting the badge assembly in place on the article of clothing;

each of said panels having a similar substantially flat core comprising magnetic material providing alternating polarity at each of opposite side edge portions of the panel;

the poles of one of said panels being in complementary orientation relative to the poles of the other of said panels in the clamping assembly and attaining efficient magnetic attraction of each panel for the other panel;

and one of said panels being adapted to lie in exposed relation at the outer side of said area of the article of clothing and having an outer face provided with means for displaying badge indicia.

4,236,332

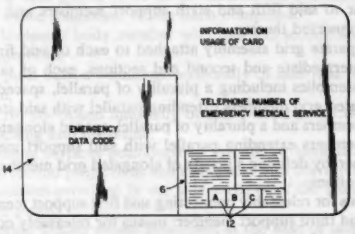
MEDICAL HISTORY CARD

John M. Domo, Cleveland, Ohio, assignor to Melchior P. Beller, Lakewood, Ohio

Filed Dec. 29, 1978, Ser. No. 974,331

Int. Cl.[3] G09F *3/02*

U.S. Cl. 40—2.2 **2 Claims**



1. A wallet size medical record card to be carried on the person of an individual, comprising:

(a) a card having a window therethrough with microfilm positioned in said window and a transparent plastic material laminated to said card and said microfilm;

(b) an identification data portion on said card comprising data identifying the individual carrying said card;

(c) an emergency data code portion on said card including a list of medical conditions, each said medical condition having listed therewith an indicium for indicating said medical condition;

(d) a first data portion on said microfilm readable by the human eye without magnification means and a second data portion on said microfilm readable by the human eye only with magnification means;

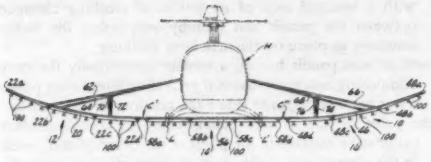
(e) said second data portion including a medical history of the individual carrying said card and said first data portion comprising those of said indicia of said emergency data code portion corresponding to those of said list of medical conditions which the individual carrying said card has whereby in a medical emergency those of said list of medical conditions which the individual has can be read on said microfilm without the need to magnify the data on said microfilm.

4,236,333

SIGN STRUCTURE

Richard C. Kohm, 3847 French Ct., St. Louis, Mo. 63116, and C. Thomas Foster, 77 Crandon, No. 9D, Key Biscayne, Fla. 33149

Filed Dec. 6, 1978, Ser. No. 966,928
Int. Cl.³ G09F *21/06*
U.S. Cl. 40—212 **14 Claims**



1. A sign structure comprising:

a first end section including first and second parallel, spaced, elongated support members, and a plurality of parallel, spaced, elongated stabilizer members perpendicular to said first and second support members and fixedly connected thereto;

an intermediate section including third and fourth parallel, spaced, elongated support members, and a plurality of parallel, spaced elongated stabilizer members perpendicular to said third and fourth support members and fixedly connected thereto;

a second end section including fifth and sixth parallel, spaced, elongated support members, and a plurality of parallel, spaced, elongated stabilizer members perpendicular to said fifth and sixth support members and fixedly connected thereto;

a separate grid assembly attached to each of said first end, intermediate and second end sections, each of said grid assemblies including a plurality of parallel, spaced, elongated grid members extending parallel with said stabilizer members and a plurality of parallel, spaced elongated grid members extending parallel with said support members, thereby defining a matrix of elongated grid member intersections;

means for releasably connecting said first support member to said third support member; means for releasably connecting said second support member to said fourth support member; means for releasably connecting said third support member to said fifth support member; and means for releasably connecting said fourth support member to said sixth support member;

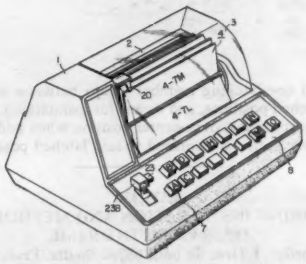
whereby, after connection of said support members, said first, third, and fifth support members are located coaxially, and said second, fourth and sixth support members are located coaxially.

4,236,334

ROTARY TYPE INFORMATION RETRIEVING MACHINE

Yoshimi Kimura, Nagareyama, Japan, assignor to Kabushiki Kaisha Fuji Seisakusho, Nagareyama, Japan

Filed Sep. 6, 1978, Ser. No. 939,976
Claims priority, application Japan, Sep. 8, 1977, 52/108044
Int. Cl.³ B42F *17/34*
U.S. Cl. 40—378 **1 Claim**



1. In a rotary type information retrieving machine having a rotary shaft; a plurality of information cards arranged in any designated sequence and hangingly supported around said rotary shaft; a rotating motor for transmitting rotational force to said rotary shaft; a plurality of information retrieving keys corresponding in number to said information cards, said keys being arranged regularly on a key board; a rotational angle selection switch comprising a panel of fixed contacts and a movable contact rotating in asssociation with said rotary member and information cards; and a gear train provided to transmit rotational force from said motor to said rotary shaft, the improvement comprising: a rotational angle changing mechanism for said rotational angle selection switch constructed with:

a manipulating lever (23A) which is swingably supported on a shaft (29);

a contact (15) provided at one end part of said lever (23A) in constant contact with a normally closed contact (NC) by a spring (25);

a holder (28) enclosing said lever (23A) and pivoted for pivotal movement at a pivotal point (30) thereof together with said lever (23A);

a projection (27) provided on one part of said lever (23A) to be engaged with and disengaged from recesses (27) to secure a position of said holder (28) and lever (23A) as displaced;

stop means (31) to restrict swinging motion of said holder (28);

a linking member (32) connected at one end thereof with said pivotal point (30) for said holder; and

another linking member (34) connected at one end thereof with the other end of said linking member (32) through a pivotal point (33) thereof, and, at the other end thereof, with said fixed contacts panel (35) which is oscillatably supported on a shaft (11A) for said rotary member,

said fixed contacts panel (35) being angularly displaced around said shaft (11A) by depressing said lever (23A) against force of the spring (25) to disengage the projection (26) from one of the recesses (27) to change the contact (15) on said lever (23A) contacted with said normally closed contact (NC) over to a normally open contact (NO), then oscillating said lever (23A) together with said holder (28) until said holder comes in contact with said stop (31), at which said projection (26) is engaged with the other recess (27), whereby said fixed contacts panel (35) is

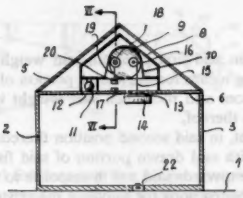
caused to displace at a predetermined angle due to interlocked motion of said linking members (32, 34) along with the oscillating motion of said lever (23A).

4,236,335

DISPLAY DEVICE

Jean Colonneau, 156, rue du Grand Parc, St. Sebastien de Morsent, France

Filed Oct. 18, 1978, Ser. No. 952,615
Claims priority, application France, Oct. 26, 1977, 77 32248
Int. Cl.³ G09F *13/00, 27/00*
U.S. Cl. 40—442 **9 Claims**



1. A display device comprising:
(a) a housing; and
(b) first and second electric circuits, associated with said housing, said first electric circuit comprising a first switch, illumination means for illuminating the exterior of said housing, and a motor of a first tape recorder; said second electric circuit comprising a second switch, second illumination means for illuminating the interior of said housing, and a motor of a second tape recorder; each of said first and second electric circuits being adapted to be connected to an electric current supply; and
(c) receiving means, associated with said housing, adapted to receive a mechanical alarm clock comprising a movement winder and an alarm winder, said clock having a counterweight attached to hang from each of said winders, said receiving means being arranged such that each of said counterweights abuts against a corresponding switch in each of said circuits when said mechanical alarm clock is inserted in said receiving means and said counterweights descend as a result of the movement of each said winders; and
(d) wherein said first and second switches are arranged beneath said receiving means such that each of said counterweights abuts against a corresponding one of said switches as said counterweights descend in response to movement by each of said winders.

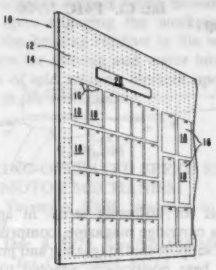
4,236,336

NOTIONS DISPLAY HEADING FOR PERFORATED BOARD

Robert Strom, Queens, N.Y., assignor to Textron Inc., Providence, R.I.

Filed Dec. 26, 1978, Ser. No. 973,363
Int. Cl.³ G09F *7/06*
U.S. Cl. 40—622 **4 Claims**

1. A notions device comprising:
a display heading surface adapted to receive identifying indicia thereon relating to articles sold on a notions counter,
peripheral sides extending rearwardly from said display heading surface,
an abutting surface extending perpendicularly outwardly from said peripheral sides to define a mounting surface spaced from said display heading surface,
a plurality of spaced recesses in said abutting surface,
a perforated board having a plurality of spaced apertures therethrough, and
a plurality of fastening elements respectively secured to said plurality of spaced recesses, each fastening element having hook members projecting through selected apertures on said perforated board whereby said recesses permit flush



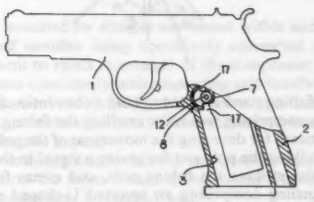
mounting between said abutting surface and said perforated board with said display heading surface being spaced from said perforated board.

4,236,337

REVERSIBLE SLIDING MAGAZINE LATCH FOR PISTOLS

Pier C. Beretta, Gardone V.T., Italy, assignor to Fabrica d'Armi Pietro Beretta S.p.A., Gardone V.T., Italy

Filed Sep. 18, 1978, Ser. No. 943,116
Claims priority, application Italy, Oct. 24, 1977, 5235 A/77
Int. Cl.³ F41C *25/06*
U.S. Cl. 42—7 **4 Claims**



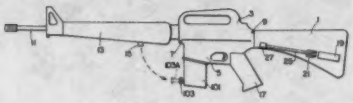
1. A sliding magazine latch for pistols having a handle and a magazine, said latch being positioned in a seat provided in the handle of said pistol, so as to be transversely oriented with respect to the magazine, which latch comprises:
(a) a U-shaped body member with first and second terminal projections;
(b) a push button positioned externally of said first projection;
(c) a rib positioned internally of said second projection for blocking said magazine;
(d) sliding surfaces positioned on the side of both said first and second projections and associated with corresponding shoulders provided in the side surfaces of the handle of said pistol;
(e) spring loaded means positioned at the base of said body member between a pair of shoulders provided at the base of the seat of said latch to permit operative displacements thereof, said spring-loaded means and said sliding surfaces being combined to permit the assembly of said body member when pressure is exerted thereon in a direction contrary to that exerted on the push button for the actuation of the latch.

4,236,338

MAGAZINE SPRING ADJUSTMENT APPARATUS

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731

Filed Feb. 27, 1979, Ser. No. 15,861
Int. Cl.[3] F41C *27/00*
U.S. Cl. 42—90 8 Claims



1. Apparatus for adjusting stress in an adjustable-stress spring within a cartridge magazine, comprising: a base; means on said base to support said magazine; and power-driven mechanism on said base positionally adapted to exert thrust in a predetermined direction against adjusting means on said magazine thereby adjusting stress in said spring.

4,236,339

SIGNALING FISHING STAND

Lorell White, 5747 S. Honore, Chicago, Ill. 60636

Filed Mar. 14, 1979, Ser. No. 20,525
Int. Cl.[3] A01K *97/12*
U.S. Cl. 43—17 6 Claims

1. A fishing stand adapted to hold a conventional fishing rod or pole, comprising means for cradling the fishing pole on the stand, means for detecting the movement of the pole caused by a fish striking the pole and for giving a signal to the fisherman of the fish striking the fishing pole, said means for detecting and signaling comprising an inverted U-shaped member for engaging the handle of said pole, at least one lever pivotally mounted to said stand, a power source, a light, a horn, a light switch and a horn switch, said means for detecting and signaling selectively operating through either one of said light and horn switches, or both, to connect one of said light and horn, or both, to said power source to give a signal, one end of said lever being pivotally mounted to said inverted U-shaped member and the other end of said lever operating one of said light or horn switches, the other of said light and horn switches being operated by said inverted U-shaped member.

4,236,340

FISHING ROD INDICATOR ASSEMBLY

James C. Cunningham, 2413 W. 25th St. Dr., Topeka, Kans. 66611

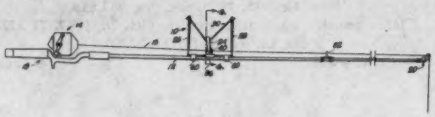
Filed Jun. 11, 1979, Ser. No. 47,567
Int. Cl.[3] A01K *97/12*
U.S. Cl. 43—17 8 Claims

1. A fishing rod indicator assembly adapted for use with an elongated fishing rod having a fishing line trained along the length thereof and a baited hook on said line, said assembly comprising:

support structure for mounting onto said rod intermediate the ends thereof and including at least one elongated mounting arm extending generally transversely of said rod;

a weight;

means mounting said weight on said arm for allowing shiftable movement of the weight between a first position adjacent said rod and a second, gravity-induced position spaced from the rod; and means for releasably locking said



weight in said first position, said weight including line-engaging means for drawing a portion of said fishing line away from said rod when said weight is in said second position thereof,

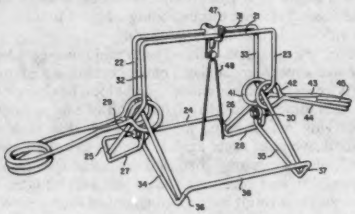
said weight, in said second position thereof and in engagement with said drawn portion of said fishing line, being shiftable towards said rod in response to the bite of a fish on said baited hook for signaling the existence of said bite.

4,236,341

ANIMAL TRAP

Reino Torkko, Longlac, Canada, assignor to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Mar. 1, 1979, Ser. No. 16,537
Int. Cl.[3] A01M *23/26*
U.S. Cl. 43—88 2 Claims



1. An animal trap comprising:

(a) a first frame member made of strong metal rod, generally rectangular in shape and defining a striker bar and an anvil bar connected by side bars,

(b) said frame member also having extending bars fixedly connected to the frame at the junction points of the anvil bar and the side bars, extending at a slight angle to the side bars, and ending in end connections,

(c) a second frame member similar to the first having similar extending bars ending in end connections,

(d) said first and second frame members connected together at the end connections such that their side bars pass each other in close proximity defining X-shaped structures at each end of the trap and such that relative motion may occur from an upper "set" position where the two striker bars lie close to each other to a lower "sprung" position where each striker bar approaches closely to the anvil bar of the other frame member,

(e) a metal rod spring device formed of one or more spring coils connected by arms to two rings, said rings encircling the said X-shaped structure at one end of the trap and said spring biased such that when the trap is in the set position the rings tend to force the striker bars apart towards the anvil bars, and

(f) a trigger device connected to the striker bars to hold them together at the set position and having a trigger release

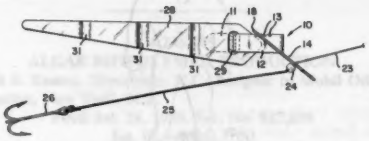
adapted to be operative by an animal passing through the trap to set off the trap causing the striker bars to strike down towards the anvil bars.

4,236,342

COMBINED FISH LURE, BAIT HOLDER AND ARTIFICIAL BAIT

Carman R. Saia, Bellingham, Wash., assignor to Kasabell Industries, Bellingham, Wash.

Filed Feb. 16, 1979, Ser. No. 12,649
Int. Cl.³ A01K *85/00, 85/01*
U.S. Cl. 43—17.6 **7 Claims**



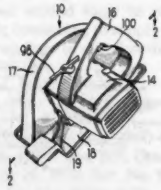
1. A combined fish lure and bait holder comprising:
a bait holder formed of a strip of resilient spring-like material folded intermediate its length to provide two laterally spaced legs adapted to clamp and hold a bait inserted therebetween,
a flat plate of greater length than width having two slots therein at one end, each slot receiving one of the laterally spaced legs of the bait holder therethrough, the slots spaced a distance apart so that as the plate is moved along the length of the laterally spaced legs from the fold thereof toward their respective free ends, the spacing of the slots causes the side legs of the bait holder to move toward one another to clamp and hold the bait therebetween,
an opening along the lengthwise mid-line of the plate receiving a length of fishline leader therethrough, and
a fishline leader extending through the opening of the plate having a fastening end for attaching to a fishline and a hook end provided with hook means, the configuration of the plate causing the lure, bait holder and bait held thereby to zigzag back and forth as well as rotate as they are pulled through the water.

4,236,343

TOY POWER TOOL

John R. Wildman, North Riverside, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 9, 1979, Ser. No. 10,834
Int. Cl.³ A63H *33/30*
U.S. Cl. 46—39 **6 Claims**



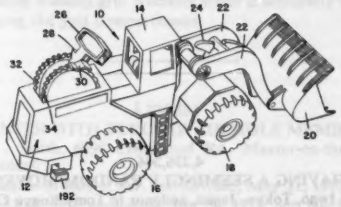
1. A toy power tool, comprising:
a housing in the shape of a power tool including means for grasping by the user;
sound generator means mounted within said housing for producing an audible signal simulating the sound of a power tool, said sound generator means including a drive means, a rotatable flywheel, a rotating element having a plurality of teeth driven by said flywheel, and a wafer normally biased out of engagement with the rotating element but movable into engagement with the teeth on said rotating element for producing a cutting sound; and
a control element mounted on the housing for engaging a workpiece and being normally biased to extend out of the housing, said control element being movable relative to said housing upon engaging the workpiece and upon movement of the housing relative to the workpiece and including means for moving said wafer into engagement with the teeth of said rotating element upon said movement relative to the workpiece.

4,236,344

TOY WITH SPRING-OPERATED SPEED REGULATED MOTOR MECHANISM

William J. Kelly, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 4, 1978, Ser. No. 966,166
Int. Cl.³ A63H *17/12*
U.S. Cl. 46—40 **12 Claims**



1. In a toy, the combination comprising:
a supporting structure;
a component attached to said structure for movement relative thereto;
handle means movably mounted on said supporting structure;
a member mounted for slidable movement within said structure, said member being operatively connected to said component to effect movement of the component;
spring means operatively interconnecting said handle means and said member for sliding said member in a first direction to a predetermined position in response to movement of said handle means;
means for retaining said member in said predetermined position against the force of said spring means whereby said spring means may be cocked; and
speed regulating means operatively coupled to said member for controlling the rate of movement of said member in a direction opposite to said first direction upon release of said retaining means for controlling the speed of movement of said component.

4,236,345

TOY ASSEMBLY WITH SELECTIVE PROPULSION OF SUBCOMPONENT PARTS

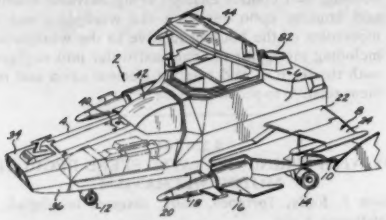
Tsutomu Inoue, Ichikawa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1979, Ser. No. 45,385
Int. Cl.³ A63H *29/16*
U.S. Cl. 46—44 **16 Claims**

1. A mobile toy assembly comprising;
a small vehicle member;
a body member configured to simulate a rocket ship and having a nose section of such a dimension to house the small vehicle member and capable of opening to provide an access for insertion and removal of the small vehicle member;
at least one projectile member removably attached to the body member;

means for generating an air pressure;

conduit means connected to at least the nose section and the projectile member, and



means for selectively directing the air pressure to one of the projectile members and the small vehicle positioned in the nose section to propel the same away from the body member.

4,236,346

TOY HAVING A SEEMINGLY RANDOM MOVEMENT

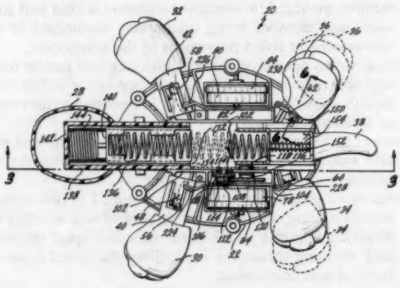
Noriaki Iwao, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Mar. 5, 1979, Ser. No. 17,413

Claims priority, application Japan, Aug. 25, 1978, 53-116336[U]

Int. Cl.³ A63H *11/10*

U.S. Cl. 46—104 **12 Claims**



1. A toy which comprises:

a base,

a plurality of movable extensions independently movably mounted on said base such that each of said extensions is movable on said base between a retracted position and an extended position,

a plurality of holding means operatively associated with said plurality of said movable extensions, each of said holding means operatively connected to one of said extensions and reversibly holding said extension in said retracted position on said base,

releasing means mounted on said base and having a plurality of operational modes wherein in each of said operational modes one or more of said holding means is activated allowing said movable extension associated with said activated holding means to move from said retracted position to said extended position.

4,236,347

FLEXIBLE DOLL CLOSURE AND HEAD MOUNTING

Thomas J. Fauls, West Orange, N.J., assignor to Mego Corp., New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,628

Int. Cl.³ A63H *3/00*

U.S. Cl. 46—156 **6 Claims**

1. In a figure toy, a closure means and head mounting in which the body portion comprises a molded skin of resiliently elastic material filled with a viscous fluid, and terminates in a wide portion, and the head is a separate hollow member interfitting with said neck portion, and closure means and head mounting comprising an elongated hollow cylindrical member having a plurality of external longitudinally spaced and circumferentially extending flanges, and providing a large diameter filling passage which is closed at the upper end thereof when filling is completed, at least one pair of said flanges centrally of the cylindrical member providing an annular recess for clampingly securing and sealably engaging said neck portion of the skin, and another pair of said flanges at end portions of said cylindrical member cooperating with means at respective ends of a cylindrical bore in said head to provide an interlock between the body portion and head restricting head movement to free rotary movement with respect to said neck portion.

4,236,348

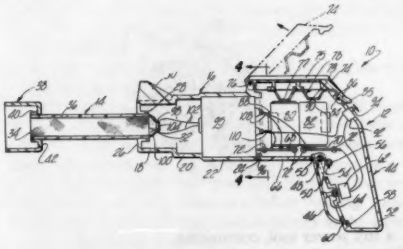
TOY SPACE GUN

Steven M. DuLac, 23138 W. LeBost Dr., Novi, Mich. 48050

Filed Feb. 26, 1979, Ser. No. 14,824

Int. Cl.³ A63H *33/26*

U.S. Cl. 46—228 **4 Claims**



1. A toy gun comprising a hollow body of opaque construction and defining a firing chamber,

an elongated hollow barrel of opaque construction extending axially from said body and having an internal end opening into said chamber, said barrel being optically transparent through its axial length and having an internal surface of optically reflective material,

outwardly concave reflective means mounted within said chamber to enclose said internal end of said barrel,

a lamp carried by said concave reflective means adjacent said internal barrel end such that light generated by said lamp is substantially isolated from said chamber by said reflective means and is substantially entirely projected through said barrel,

a trigger mounted on said body and including operator responsive switch means extending from within said chamber, and

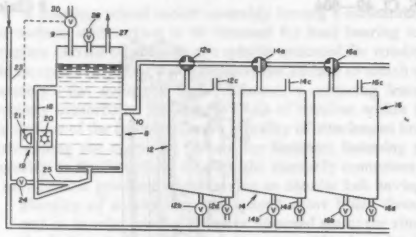
power means disposed within said chamber and connected to said lamp and said switch means for generating light energy at said lamp for remote projection through said barrel.

4,236,349

ALGAE BIOPOLYMER PRODUCTION

Joseph S. Ramus, Gloucester, N.C., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,698
Int. Cl.³ A01G 7/00
U.S. Cl. 47—1.4 **12 Claims**



1. In a process for the production of biopolymer by cultivation of algae in an aqueous culture in the presence of assimilable carbon and incident light energy wherein biopolymer production is enhanced by creating a nitrogen deficiency in said culture to shift from a growth phase favoring cell division to a senescent phase favoring biopolymer production, the improvement comprising:

(a) carrying out said growth phase in a first stage operated in a continuous mode in which fresh nitrogen-containing nutrient medium is supplied to said culture to sustain exponential cell growth, and

(b) concomitantly with the supply of fresh nutrient medium to said first stage, transferring a portion of said culture to a second stage which is separate from said first stage and in which assimilable carbon is supplied to said culture while the supply of nitrogen is limited to create a nitrogen deficiency in said second stage to enhance biopolymer production while continuing to supply fresh nitrogen-containing nutrient medium to said first stage to continue said growth phase.

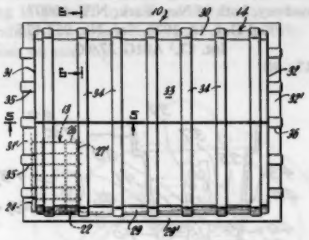
4,236,350

SEEDLING TRAY ASSEMBLY AND GREENHOUSE

Arthur Hasselbach, Sr., P.O. Box 369, Cranbury, N.J. 08512

Filed Aug. 21, 1978, Ser. No. 935,366
Int. Cl.³ A01G 9/00
U.S. Cl. 47—17 **3 Claims**

1. A seedling tray comprising a base having a bottom, side walls and end walls, a flat sheet of water impervious material disposed within said base and spaced from the bottom thereof and a seedling holding grid overlying and resting on said sheet of material, said grid having longitudinal and transverse intersecting wedge shaped partitions to provide upwardly diverging tapered compartments for holding the seedlings, said base including means formed in the bottom, side and end walls for supporting said sheet of material in spaced relationship to the bottom to provide space for receiving and redirecting excess water to water drainage openings, said drainage openings adjoining the bottom wall, said flat sheet of material having



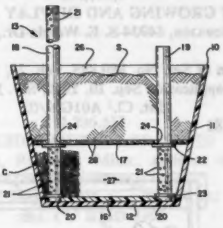
upwardly formed criss-crossed embossments to provide for the temporary accumulation of and distribution of water beneath said seedling holding grid whereby water is uniformly distributed among the grid compartments.

4,236,351

PLANTER WITH TUBULAR AIR HOLE MEMBER

Elmer L. Smith, 6090 Cedarwood Rd., Mentor-on-the-Lake, Ohio 44060

Continuation-in-part of Ser. No. 801,530, May 31, 1977, Pat. No. 4,173,098. This application Nov. 30, 1978, Ser. No. 964,927
Int. Cl.³ A01G 25/00
U.S. Cl. 47—79 **4 Claims**



1. A removable planter insert structure for a receptacle open at the top and having an imperforate bottom, said insert structure comprising a horizontal perforated wall member adapted to be disposed within a receptacle and spaced above the bottom thereof to divide the receptacle into upper and lower compartments;

said wall member having aperture means therein;

tubular means having a cross section such as to slideably interfit said aperture means and to project upwardly through said aperture and above said horizontal wall;

said tubular means having spacer means for limiting the extent to which said tubular means can project through said aperture means and for supporting said wall member a determined distance above the bottom of a receptacle;

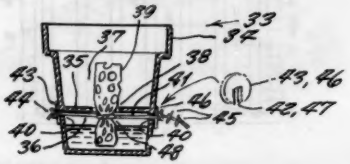
said tubular means being perforated below said spacer means to allow air and water to pass radially therethrough;

said upper compartment adapted to hold soil to a level below the upper ends of said tubular means whereby when excess water from said soil passes through said perforated horizontal wall and collects in said lower compartment, said tubular members provide means for air circulation and evaporation within said lower compartment and said perforated wall portion provides means for humid air to aerate said soil and keep it moist.

4,236,352
PLANT WATERING DEVICE

William B. Heaney, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Oct. 18, 1978, Ser. No. 952,476
Int. Cl.[3] A01G 27/00
U.S. Cl. 47—80 2 Claims

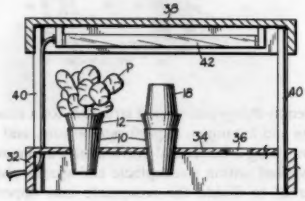


1. A plant watering device, comprising in combination, a quantity of earth in a container for plants to be rooted therein, a quantity of water below said container, a spongy material extending from said earth down to said water and manually adjustable constricting means to control water volume traveling through said material by a capillary action, wherein said container comprises an upper compartment of a pot having a horizontal partition so to form a chamber therebelow for said water, small opening through said partition and through which said material extends, wherein said means further comprises holes in diametrically opposite side walls of said chamber above a water level thereof, a cord looped once and loose tied at its center around said material while opposite ends of said cord extend outwardly of said holes and are secured.

4,236,353
PLANT GROWING AND DISPLAY ASSEMBLY

Gordon U. Sorenson, 14934 S. E. Wanda Dr., Milwaukie, Oreg. 97222

Continuation of Ser. No. 880,885, Feb. 24, 1978, abandoned.
This application Sep. 10, 1979, Ser. No. 73,719
Int. Cl.[3] A01G 9/02
U.S. Cl. 47—81 3 Claims

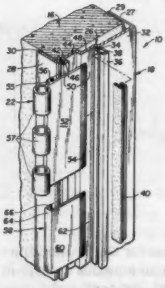


1. A plant growing and display assembly comprising
(a) a transparent, open top first container arranged to hold a supply of water,
(b) said first container being tapered to a smaller dimension from top to bottom,
(c) a transparent, open top second container arranged to hold a supply of plant growth material and plants,
(d) said second container being tapered to a smaller dimension from top to bottom and being of a selected larger diameter than said first container whereby to seat in said first container in a releasable wedging fit with a lower portion of said second container extending down into said first container but terminating above the bottom of said first container,
(e) said second container having an aperture adjacent to a lower portion thereof,
(f) a wick extending through said aperture and having an end portion thereof immersed in the water supply in said first container and another end portion thereof extending up in said second container in a location to feed water to a plant in the plant growth material,
(g) and a transparent open top third container of substantially the same size and taper as said first container,
(h) said third container being inverted and having a releasable wedging fit in said second container and forming a terrarium effect for plants in said second container.

4,236,354
DOOR FRAME ASSEMBLY

Alexander E. Passovoy, Oakland, Calif., assignor to Anodex, San Ramon, Calif.

Filed Jun. 1, 1979, Ser. No. 44,612
Int. Cl.[3] E06B 1/04
U.S. Cl. 49—504 8 Claims



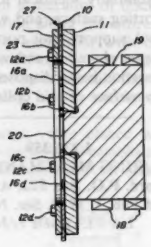
1. Apparatus for providing a door frame in an opening formed in a wall to accommodate a door, said apparatus comprising:
a frame member including a central web adapted to span the width of the wall and a pair of side flanges extending from the lateral edges of the web and adapted to fit over the edges of the wall circumscribing the opening, said web including a planar section extending from one lateral edge to approximately the center of the web and terminating in a first transversely opening groove in the plane of said planar portion, said web further including a second transversely opening groove proximate the second lateral edge and parallel to the first groove but offset therefrom toward the wall;
at least two hinge members each having a planar hinge plate which includes one edge providing a tongue adapted to engage and mate with the first groove in the frame member and a projecting tongue underlying the hinge plate and adapted to engage the second groove in the frame member so that the hinge members can be located where desired and attached to the frame member after installation of the frame member in the opening; and
a plurality of cover plate sections each including a generally planar portion having a lateral edge providing a tongue adapted to mate with and engage the first groove in the frame member and a projecting tongue underlying the planar portion and adapted to engage the second groove in the frame member, said cover plate sections adapted to be cut to fit the gaps between hinge plates and the ends of the frame member so that the space between hinge plates is covered to provide an aesthetically pleasing door frame.

4,236,355

PRECISION GRINDING WHEEL MOUNT

Douglas J. Hennenfent, Minneapolis; Robert A. Johnson, Minnetonka, and Allan L. Holmstrand, Bloomington, all of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Jul. 24, 1978, Ser. No. 927,321
Int. Cl.³ B24B 41/00
U.S. Cl. 51—168 2 Claims



1. A grinding wheel mount assembly having a substantially flat surface, said surface to be fastened for load bearing to a faceplate carried on the end of a spindle mounted for rotation, said faceplate including a substantially flat surface to which the assembly's flat surface is to be fastened, a centering feature precisely centered on the spindle's axis of rotation within the flat surface of the faceplate, and a plurality of attachment holes surrounding the centering feature for fasteners fastening the assembly to the faceplate, wherein the assembly comprises:

(a) a flexible grinding wheel having an annular hub having a plurality of axially directed spaced apart holes therein, and an annular band of abrasive disposed about the rim of the hub and firmly bonded thereto, said wheel having sides parallel to each other, and having each side of the abrasive band very slightly below the adjacent plane of the hub;

(b) a clamping plate in the shape of annular ring whose interior opening is at least the same size as the hub's central opening, having an external diameter at least that of the hub's outer diameter, having a plurality of axially directed holes substantially the size of those in the hub passing between the two faces of the plate and spaced to conjoin with those in the hub when properly oriented therewith, and having a flat side perpendicular to the axis;

(c) a mounting disc having (i) the substantially flat surface of the assembly, (ii) a centrally located centering feature within said surface shaped to closely mate with the faceplate's centering feature to prevent relative radial movement between the mounting plate and the faceplate when so mated, (iii) a plurality of axially directed holes located to conjoin with the faceplate's attachment holes when so mated to permit fasteners to pass therethrough to fasten the flat surface of the assembly to the faceplate, and (iv) a plurality of holes located to conjoin with the holes in the hub when the hub is properly oriented therewith; and

(d) a plurality of cylinder type fasteners passing sequentially through first the clamping plate and then the hub into the mounting disc to firmly clamp the grinding wheel between the flat side of clamping plate and the flat surface of the mounting disc concentrically with both.

4,236,356

CUTTING SAW AND CONCRETE GROOVER

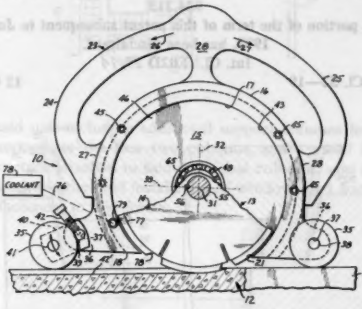
John D. Ward, 997 E. Athens St., Altadena, Calif. 91001

Filed Jan. 5, 1979, Ser. No. 1,050
Int. Cl.³ B24B 23/00
U.S. Cl. 51—176 29 Claims

1. In apparatus for cutting material with a circular saw blade, the improvement comprising in combination:

a housing including a curved top for partially accommodating the saw blade, and a bottom having an opening permitting partial protrusion of the saw blade from the housing;

means for enabling manual propulsion of the housing along said material, including a curved handle on said top extending in parallel to said partially accommodated and protruding saw blade between diametrically opposed locations on said top;



means connected to the housing and the saw blade for rotating said partially accommodated and protruding saw blade; and

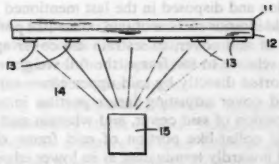
means connected to the housing for guiding the saw blade in cutting engagement with said material and for maintaining the housing including said bottom in spaced relationship to said material during cutting with the saw blade.

4,236,357

ETCHED METAL ABRASIVES

John J. Frantzen, Roseville, Minn., assignor to Minnesota Micro Metal, Inc., St. Paul, Minn.

Filed May 8, 1979, Ser. No. 37,391
Int. Cl.² B24D 3/06
U.S. Cl. 51—309 2 Claims



1. A method of forming abrasive material comprising the steps of:

applying an etching resist material to the surface of a smooth metal laminate sheet having a relatively low carbon steel base layer and a relatively high carbon steel top layer, said resist material being applied as a multiplicity of discreet elements on said top layer,

etching away the said top layer in the areas not protected by the elements of resist so as to leave protrusions of high carbon steel extending outward from said low carbon base layer,

removing the etching resist material, and

hardening said protrusions by heat treating the protrusions.

4,236,358

ADJUSTABLE MANHOLE COVER SUPPORT STRUCTURE

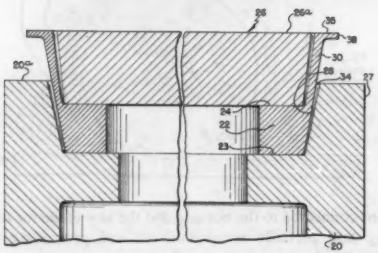
Harold M. Bowman, Fairview Park, Ohio, assignor to National Utility Products Company, Cleveland, Ohio

Continuation of Ser. No. 689,088, May 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 494,817, Aug. 5, 1974, Pat. No. 3,968,600, which is a continuation of Ser. No. 286,115, Sep. 5, 1972, abandoned. This application Aug. 16, 1978, Ser. No. 934,213

The portion of the term of this patent subsequent to Jul. 13, 1993, has been disclaimed.

Int. Cl.[3] E02D *29/14*

U.S. Cl. 52—19 **12 Claims**



1. A manhole cover support structure to vertically adjust and support a manhole cover in a manhole frame, wherein the manhole frame is supported in a manhole housing and has an upwardly facing shoulder circumscribed by an upwardly projecting collar-like portion defining the manhole opening, said shoulder including a generally upwardly facing, circular-like, in plan surface area, a generally circular, in plan manhole cover normally engaged with and supported on said surface area of said shoulder, with said cover substantially completely filling said opening, except for predetermined generally unobstructed lateral clearance between said cover and the confronting interior surface of said collar-like portion, an adjusting and restraining member comprising a cover adjusting insert portion resting on said surface area of said shoulder and having a circular-like, in plan upper cover supporting surface on which said cover rests in adjusted, elevated position relative to the shoulder of said frame, the outer peripheral edge of said cover spaced laterally from said interior surface of said collar-like portion in said adjusted, elevated position of said cover, and a relatively thin lateral support ring portion integrally formed with and projecting rigidly upwardly from said cover support insert portion and disposed in the last mentioned lateral space between said interior surface of said collar-like portion and said outer edge of said cover, to restrain the cover against lateral movement relative to the frame, the full weight of said cover being supported directly by said upper cover supporting surface of said cover adjusting insert portion in said adjusted elevated position of said cover, and wherein said interior surface of said collar-like portion of said frame slopes downwardly and inwardly terminating at its lower edge at the outer periphery of said shoulder, said collar-like portion having a substantially horizontal top surface, said adjusting insert portion having an outer side surface which tapers inwardly in a downward direction and which last mentioned side surface is disposed in confronting generally closely spaced relation to said interior surface, and said support ring portion including a defining wall structure which on its outer side surface is tapered inwardly in a downward direction and generally complementary to the taper on said outer side surface of said adjusting insert portion, the last mentioned side surface forming a continuation of said outer side surface of said support ring portion and being tapered continuously throughout the vertical extent of said insert portion, said support ring portion having an inner downwardly and inwardly sloped defining side surface, which merges with the outer periphery of said upper cover supporting surface, and said cover comprising an outer defining side surface which is sloped generally complementary to said sloped inner defining side surface of said support ring portion, said cover and support ring portion confronting side surfaces being disposed in generally laterally spaced relation to one another, the diameter of said surface area of said shoulder and of said upper cover supporting surface being substantially identical, the diameter of the bottom surface of said insert portion being substantially identical to said diameter of said upper cover supporting surface, and with the top surfaces of said cover and said support ring portion being disposed at substantially the same elevation and with said top surface of said support ring portion being disposed in elevated condition relative to said top surface of said collar-like portion.

4,236,359

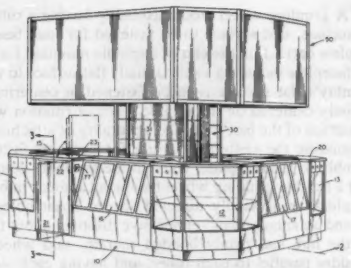
SELF SECURING MERCHANDISING KIOSK

Anthony Y. Woolford, P.O. Box 522, Amherst, N.H. 03102

Filed Feb. 1, 1979, Ser. No. 8,251

Int. Cl.[2] E04B *1/346*

U.S. Cl. 52—66 **8 Claims**



1. In a merchandising kiosk having a base shell totally enclosing a working area and adapted to accommodate therein at least one person, said base including: (1) peripheral cabinets adapted to outwardly display merchandise through windows, the tops of which cabinets end in a continuous counter around said base shell, (2) said continuous center, and (3) an entrance door, the improvements comprising:

A canopy having a raised and a lowered position and being at least peripherally coextensive with the inner circumference of said base shell, said canopy in said lowered position being adapted to match with the top of said base shell and form a secure area within, and in said raised position to be above the level of the head of said person standing therein;

Said canopy being supported for raising and lowering by at least two spaced apart posts within the central portion of said working area, said posts being extensible from a collapsed position to effect said raised position;

And said posts being encased at least in part in a vertical display unit about which said person may work.

4,236,360

MULTIPLE-PANE WINDOW COMPRISING A FLUID FILTER CURTAIN

Andre' Parrier; Jean Parrier, and Henri Parrier, all of 41, rue Marius Poncet, 69390 Saint-Genis-les-Ollieres, France

Filed Aug. 17, 1978, Ser. No. 934,508

Claims priority, application France, Aug. 26, 1977, 77 26774

Int. Cl.[3] G02B *5/24;* E06B *7/12*

U.S. Cl. 52—171 **10 Claims**

1. A window comprising a rectangular frame constituted by two vertical uprights and two horizontal cross-members consisting respectively of a top cross-member and a bottom cross-member and at least two flat, smooth and parallel window panes secured to said frame along their edges, said frame and

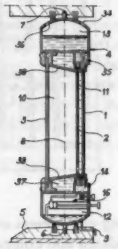
said two window panes being so arranged as to define a leak-tight space, and further comprising:

a bottom reservoir housed within said bottom cross-member and adapted to receive a first fluid,

a first distribution chamber housed within said bottom cross-member and adapted to extend along the entire length of those edges of the window panes which are in contact with the bottom cross-member, said first distribution chamber being adapted to communicate with said leak-tight space through a plurality of ducts disposed in uniformly spaced relation along the entire length,

a lift and force pump associated with control means and having an inlet which opens into said bottom reservoir and an outlet which opens into said first distribution chamber, said pump being placed within said bottom cross-member,

a controllable discharge valve placed within said bottom cross-member and capable of establishing a communication between said bottom reservoir and said first distribution chamber,



a top reservoir housed within said top cross-member and provided with means for establishing a communication with that portion of said leak-tight space which is located in the vicinity of said top cross-member and capable of receiving a second fluid, the density of the first fluid being higher than that of the second fluid, the two fluids being such as to have different optical indices,

each cross-member and each upright is provided on the internal face directed towards the window panes with a lip, said lip having a thick portion in the vicinity of the upright or of the cross-member and a portion of reduced thickness extending between said window panes, the edge of each of the two window panes being clamped between one face of said portion of reduced thickness and an external packing-piece, said two packing-pieces being each secured by clamping against one of the two faces of the upright or of the cross-member which is parallel to said window panes, the ducts extending through said lip and seals and being interposed between the faces of the portion of reduced thickness and the window panes and between the packing-pieces and said panes.

4,236,361

PREFABRICATED BUILDING COMPONENTS

Joseph Boden, 341 Timer View Dr., Oak Brook, Ill. 60521

Filed Jun. 12, 1978, Ser. No. 914,970

Int. Cl.³ E04C 2/22

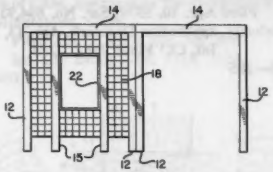
U.S. Cl. 52—204 **8 Claims**

1. A prefabricated wall unit for use in building construction comprising:

(a) at least two elongated concrete reinforced support columns, said columns being in spaced parallel relation and each defining a compartment adapted to receive said concrete reinforcement, said columns further including means for joining adjacent wall units together,

(b) a wire mesh disposed between said columns in the plane defined by said columns, the ends of said mesh being embedded in the concrete,

(c) foam insulating material molded to the wire mesh and filling substantially the entire space between said columns to a thickness of at least approximately the thickness of said columns, said insulation being rigid and lightweight,



(d) said unit including additional support columns located intermediate the first two columns, and a metal frame structure attached to said additional columns, said frame permitting the field installation of windows and doors by attachment to said frame.

4,236,362

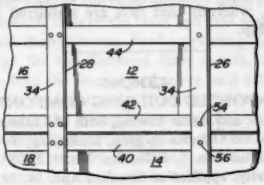
WALL SYSTEM

Ray E. Omholt, c/o American Sportsurfacing Co., Inc. Strafford Office Bldg. No. 2 Suite 218, Wayne, Pa. 19087

Filed Aug. 31, 1978, Ser. No. 938,295

Int. Cl.³ E04B 5/52; A63J 3/00

U.S. Cl. 52—228 **12 Claims**



1. A restricted growth or shrinkage sports court wall system comprising:

(a) a plurality of panels comprised of wood based material dimensionally reactive to moisture content changes, each panel having a rear face disposed in a common plane with the rear faces of the other panels,

(b) a plurality of substantially parallel support members more dimensionally stable in their longitudinal direction with respect to moisture induced dimensional changes than said panels in said longitudinal direction, said support members being substantially rigid in a plane perpendicular to said common plane, said support members being secured to associated panels, and

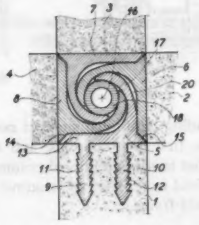
(c) means to restrain moisture induced movement of said panels in a direction generally parallel to said common plane and transverse to said longitudinal direction, said restraning means including a plurality of flat stress straps dimensionally inert with respect to environmental moisture changes, said stress straps being secured to associated panels in a plane parallel to said common plane in said transverse direction and being located between said associated panels and said support members, and fasteners passing into said panels and through intersecting portions of said stress straps and said support members.

4,236,363

ASSEMBLY ELEMENT SETS

Knud Vinther, and Jette V. Vinther, both of DK-8355 Ny, Solbjerg, Denmark

Filed Apr. 10, 1978, Ser. No. 894,914
Claims priority, application Denmark, Apr. 13, 1977, 1625/77
Int. Cl.[3] E04B 2/62, 2/74
U.S. Cl. 52—285 11 Claims



1. A set of at least three elongated assembly rails for engaging each other along an axial line, at least one of said rails being adapted to have a plate affixed thereto,

each of said rails having at least one axially extending end portion comprising a base part and a resilient hook-shaped part,

the base part of each adjacent rail having a pair of radially directed surfaces adapted to mate with the corresponding radially directed surfaces of the base parts of the adjacent rails, and the other hook-shaped parts thereof all being substantially equal in size and forming a cylindrical hole around said axial line and

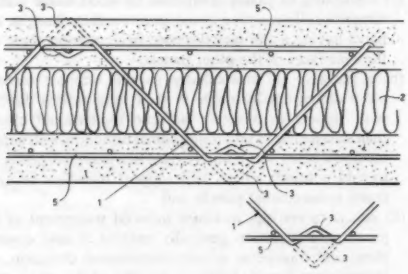
a locking member disposed in said hole for urging the portions of said hook-shaped parts adjacent said hole against each other, said locking member exerting a camming action which thereby forces said radially directed surfaces together, whereby said rails are stabilized in a locking relationship.

4,236,364

REINFORCED BUILDING COMPONENT

Arnold Larsson, and Assar Elwing, both of Linkoping, Sweden, assignors to AB Östgöta-Byggen, Linkoping, Sweden

Filed Jun. 5, 1978, Ser. No. 912,279
Claims priority, application Sweden, Apr. 24, 1978, 7804662
Int. Cl.[2] E04B 1/16
U.S. Cl. 52—383 1 Claim



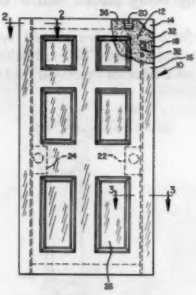
1. A reinforced building component comprising a slab, a reinforcement which includes a number of juxtaposed wires bent in zigzag shape, said zigzag wires having central parts located within the slab, while the crests of the wires extend outside both sides of the slab, a lattice lying outside said slab and including interconnected transverse and longitudinal wires, said zigzag wires having their crests bent over to clampingly engage the wires of said lattice to connect the zigzag wires to the lattice wires mechanically.

4,236,365

RIGID BUILDING COMPONENT AND METHOD OF MANUFACTURE

Robert G. Wheeler, Corvallis, Oreg., assignor to Wood Processes, Oregon Ltd., Corvallis, Oreg.

Division of Ser. No. 832,207, Sep. 12, 1977, Pat. No. 4,148,857.
This application Aug. 25, 1978, Ser. No. 936,811
Int. Cl.[2] E06B 3/70; B32B 3/02
U.S. Cl. 52—455 3 Claims



1. A rigid building component comprising:

a core of consolidated and compacted coarse wooden particles disposed between a pair of substantially parallel densified outer skins of cellulosic fibers firmly bonded to said core, said coarse wooden components including adhesive material coated thereupon and dispersed throughout said rigid building component for adhering said particles into a solid structure,

and an interior solid wood edge frame positioned within said coarse wooden particles around the peripheral edge of said building component, said edge frame extending completely around said building component and comprising a pair of stiles on either side of said building component joined by a pair of rails at the upper and lower edges of said building component, each of said stiles and rails comprising a board of predetermined thickness having flat sides substantially parallel to said outer skins, the coarse wooden particles between the sides of said boards and said outer skins being compacted to have a density substantially greater than the density of said wooden particles located centrally of said building component within said solid wood edge frame to provide solid durable wooden edges adjacent said edge frame around the periphery of said building component.

4,236,366

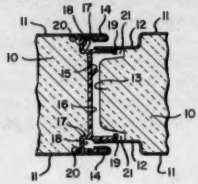
PREFABRICATED WALL PANEL

Willem Rijnders, Alblasserdam, Netherlands, assignor to Hunter Douglas International N.V., Netherlands Antilles

Filed Dec. 11, 1978, Ser. No. 968,425
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1977, 2754814
Int. Cl.[3] E04C 1/30
U.S. Cl. 52—580 6 Claims

1. A prefabricated wall panel comprising a central core of insulating material, two substantially parallel facing sheets on the opposite faces of said core, said core having a lateral projection of a thickness less than said core along one side edge of said panel, each of said facing sheets having free edges along said one edge extending in spaced relationship to said lateral projection to define a pair of grooves along said one edge, each of said grooves being defined on its inner side by said lateral

projection and on its outer side by the free edge of one of said facing sheets, the opposite side edge of said panel having a connecting member, said connecting member having a pair of outer laterally projecting tongues, the edges of the adjacent facing sheets being bent around said outer projecting tongues, said connecting member also having a pair of inner laterally projecting tongues spaced inwardly of said outer projecting



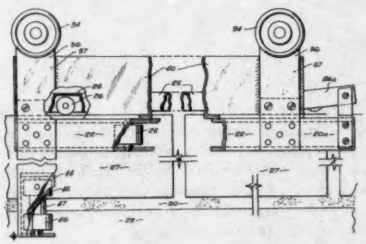
tongues, the space between and inner projecting tongue and an adjacent outer projecting tongue being sufficient to receive the free edge portions of the sheets of an adjacent identical wall panel, the inner laterally projecting tongues being spaced from one another by a distance to receive the lateral projection of the core of an adjacent identical wall panel, and said inner tongues being positioned and dimensioned to be receivable in the grooves of said adjacent panel.

4,236,367

BRICKLAYING APPARATUS

Mieczylaw Wilczynski, 47 Boronia Rd., Greenacre 2190, Australia

Filed Aug. 24, 1978, Ser. No. 936,346
Claims priority, application Australia, Aug. 26, 1977, PD1408
Int. Cl.[3] E04G *21/22*
U.S. Cl. 52—749 **17 Claims**



1. An apparatus for facilitating the laying of a course of bricks comprising:

first and second lateral alignment means disposed parallel to each other and extending longitudinally of the apparatus, each said alignment means comprising:

a plurality of rollers for engaging a respective opposite side face of the course at a plurality of points disposed in a straight line along a length of a course, and

means located at a forward end portion of a respective alignment means adapted to engage a respective opposite side face of the course at at least one point disposed outwardly of said course in relation to a straight line; and

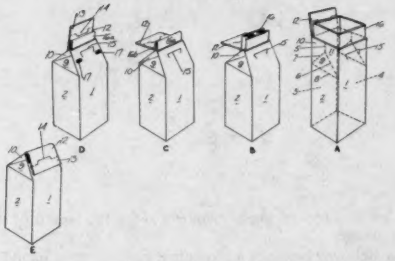
support means adapted to engage the upper surface of said course.

4,236,368

CARTON CLOSING AND SEALING APPARATUS FOR LINED CARTONS AND METHOD OF CLOSING SAME

Robert W. Nerenberg, Middletown, and James H. Shiverdecker, Dayton, both of Ohio, assignors to The Interstate Folding Box Company, Middletown, Ohio

Filed Jan. 2, 1979, Ser. No. 338
Int. Cl.[3] B65B *7/08, 7/18, 7/24*
U.S. Cl. 53—491 **15 Claims**



1. Apparatus for closing and sealing taper top cartons having front, rear and opposing end walls, a closure flap hingedly connected to the upper edge of the rear wall, the carton including a tubular liner having its open mouth projecting beyond the upper end of the carton body, the upper portions of the end walls being scored to define sets of bellows-like gussets, said apparatus comprising conveying means for advancing the cartons in a path of travel with the opposing carton end walls defining the leading and trailing ends of the cartons, deflecting means for simultaneously deflecting inwardly the opposing sets of bellows-like gussets and the opposite ends of the liner mouth, guide means for concurrently displacing toward each other the upper ends of the front and rear walls so as to juxtapose the uppermost ends of the front and rear walls and flatten the liner mouth therebetween, liner supporting means defining a folding edge for the flattened liner mouth, sweep means positioned to fold the liner mouth over said folding edge to form a reversely folded double thickness liner mouth, pressing means for pressing the folded liner mouth, infolding means for concurrently infolding said closure flap and said reversely folded liner mouth over the upper edge of said front wall, and attachment means for securing the folded closure flap to the front wall of the carton.

4,236,369

ROW CROP ATTACHMENT

Frans J. G. C. Decoene, Zedelgem, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Nov. 1, 1978, Ser. No. 956,717
Claims priority, application United Kingdom, Nov. 9, 1977, 46542/77
Int. Cl.[3] A01D *45/02*
U.S. Cl. 56—60 **24 Claims**

1. A row crop attachment for a harvesting machine comprising:

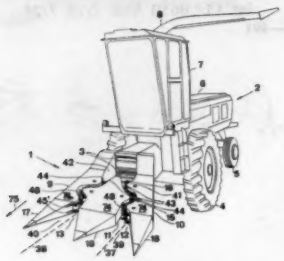
first and second guide members each having a first guide surface, the first guide surface of said first and second guide members being spaced apart and defining therebetween an elongated stalkway terminating at a rear discharge opening;

a plurality of conveyor elements rotatably affixed to said guide members, each conveyor element including a plurality of outwardly extending crop engaging members, said conveyor elements being positioned along the length of said stalkway such that said crop engaging members cyclically extend into said stalkway and crop stalks entering said stalkway are moved along the length of said stalkway

toward said discharge opening in response to being alternately engaged by each of the conveyor elements;

drive means to positively rotate said conveyor elements in timed relation;

said conveyor elements being alternately staggered on said



first and second guide members along the length of said stalkway;

said stalkway being of a serpentine configuration including concave portions; and

said conveyor elements are affixed to said first and second guide members adjacent said concave portions.

4,236,370

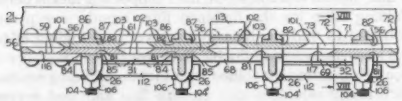
MOWER WITH TWO SICKLE BARS

J. Lyle Shaver, Blue Springs, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation of Ser. No. 25,563, Mar. 30, 1979, abandoned, which is a continuation of Ser. No. 802,478, Jun. 1, 1977, abandoned. This application Dec. 17, 1979, Ser. No. 104,182

Int. Cl.³ A01D *53/12*

U.S. Cl. 56—297 **6 Claims**



1. A mowing device comprising in combination:

a frame structure adapted for forward travel over ground having a standing crop thereon,

a stationary cutter bar secured to and extending transversely along the front end of said frame structure;

a plurality of substantially uniform length standard knife guards mounted in transverse alignment on said cutter bar and projecting forwardly therefrom, each of said standard guards having an upward facing horizontal ledger surface terminating in first and second shearing edges at its transversely opposite ends,

first and second conversely reciprocating sickle bars disposed in generally parallel relation to and forwardly of said cutter bar, said sickle bars being in transverse alignment and having inboard ends terminating in an end to end relationship at a midportion of said cutter bar, the transverse space between said inboard ends varying during reciprocation of said sickle bars,

knife elements mounted on the upper surfaces of said first and second sickle bars and cooperable with said first and second edges of said standard guards for cutting crop,

an extension bar mounted above and secured to one of said sickle bars at its inboard end and having a portion extending in overlying relation to the inboard end of the other sickle bar,

a plurality of inverted knife elements mounted on the bottom surface of said extension bar in overlying relation to said transverse space between said first and second sickle bars, and

a plurality of special knife guards mounted on said central portion of said cutter bar in transverse alignment with each other and with said standard guards and projecting forwardly from said cutter bar, each of said special knife guards having upper and lower vertically spaced horizontal ledger surfaces, with shearing edges at transversely opposite sides thereof, said inverted knife elements cooperating with said shearing edges of said upper ledger surfaces to cut crop in said transverse space between the inboard ends of said first and second sickle bars during reciprocation of the latter, said transverse space between said sickle bars being covered by said inverted knife elements in all positions of reciprocation of said sickle bars.

4,236,371

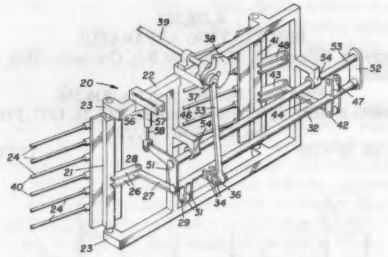
PICKING DEVICE FOR HARVESTING MACHINES

Gerald L. Claxton, Fresno, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed Oct. 2, 1978, Ser. No. 948,093

Int. Cl.³ A01D *46/00*

U.S. Cl. 56—330 **36 Claims**



1. The method of operating the striker rods of a harvesting machine, the machine being adapted to straddle and move along a row of plants and having first and second opposed and elongated striker rods mounted on the machine and being pivotal about vertical axes so that the rods and tips thereof can be moved inwardly towards and outwardly from the centerline of the machine, the method comprising:

continuously oscillating each of the striker rods about its vertical axes with a constant force of oscillation and through a constant arcuate stroke inwardly and outwardly from the centerline of the machine as the machine moves along the row of plants,

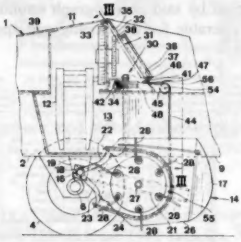
sensing the amount of force exerted by each of the striker rods against the plants as the striker rods move inwardly towards the centerline of the machine and strike the plants,

shifting the stroke of the first striker rod tip away from the centerline of the machine while maintaining the constant force of ocillation and the constant stroke thereof when the force exerted by the first striker rod on the plants exceeds a desired reference level, and continuing to shift such stroke away from the centerline of the machine until the force exerted by the first striker rod on the plant no longer exceeds such reference level.

4,236,372
AGRICULTURAL HARVESTING MACHINES WITH CROP PICK-UP MECHANISMS

James A. Munro, Aylesbury, and Alan P. Lummis, Tring, both of England, assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 28, 1979, Ser. No. 70,297
Claims priority, application United Kingdom, Sep. 5, 1978, 35628/78
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—364 3 Claims

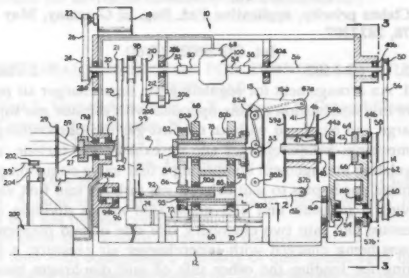


1. An agricultural harvesting machine comprising a frame, a crop pick-up mechanism mounted on the frame for flotational movement with respect thereto, and counterbalancing means operable to counterbalance at least a portion of the weight of the pick-up mechanism, the counterbalancing means comprising a combined sheave structure rotatably mounted on the frame and having a first sheave coaxial with the axis of rotation, and a second sheave connected for rotational movement with the first sheave and having a non-uniform radius relative to the axis of rotation, resilient means coupled between the frame and the sheave structure, and first and second interconnecting means interconnecting the combined sheave structure with the pick-up means and the resilient means, respectively, the first and second interconnecting means extending around the first and second sheaves, respectively, of the combined sheave structure and the arrangement being such that as the sheave structure rotates, the moment about the axis of rotation of the sheave structure produced by the resilient means is always substantially equal to the moment about the same axis produced by the weight of the pick-up means irrespective of the position of the latter relative to the frame.

4,236,373
TRAVERSE CONTROL SYSTEM

Ben Bravin, Los Angeles, Calif., assignor to Dynamex Corporation, Long Beach, Calif.

Division of Ser. No. 944,149, Sep. 30, 1978. This application Jul. 2, 1979, Ser. No. 53,690
Int. Cl.³ D07B *3/08, 7/10;* B65H *54/02*
U.S. Cl. 57—71 6 Claims



1. In a wire twisting and winding apparatus having a frame, a reel shaft rotatably mounted on said frame, a reel spindle drivably coupled to said reel shaft and adapted to receive a take-up reel having left and right flanges, a flyer rotatably mounted on a flyer carriage, said flyer carriage being reciprocally mounted on said frame, means for reciprocally driving said flyer carriage between left and right reversal means movably mounted on said frame in spatial relation to said flyer carriage, said reversal means being coupled to said flyer carriage drive means and adapted to cause the reversal of the drive direction thereof, and means affixed to said flyer carriage for activating said left and right reversal means alternately as said flyer carriage traverses reciprocally, an improved control means for automatically adjusting the positions of said reversal means comprising:

(a) left and right drive means coupled to said left and right reversal means respectively for moving the same relative to said flyer carriage;

(b) left and right zone sense means mounted on said frame in spatial relation to said left and right reversal means respectively and said flyer carriage, said zone sense means being adapted to provide, when activated by said activation means, an indication that said flyer carriage is within predetermined left and right zones with respect to said left and right reversal means respectively;

(c) first means coupled to a strand of wire being drawn into said apparatus, said first means being responsive to the velocity of said wire strand and adapted to output an analogous representation of a wire velocity increase or decrease;

(d) logic means coupled to said left and right zone sense means, said first responsive means and said left and right drive means, said logic means being adapted to activate said left drive means in first and opposite directions whenever said wire velocity increases or decreases respectively and said flyer carriage is within said left zone, and to activate said right drive means in first and opposite directions whenever said wire velocity increases or decreases respectively and said flyer carriage is within said right zone,

whereby, said first direction of said left and right drive means is selected to drive said left reversal means to the right and said right reversal means to the left respectively, thereby adjusting the positions of said reversal means with respect to said flyer carriage so as to eliminate increases and decreases in said velocity of said wire strand due to accumulations and recesses respectively of said wire adjacent said flanges of said take-up reel, and each traverse of said flyer carriage substantially corresponds to the distance between said flanges of said reel.

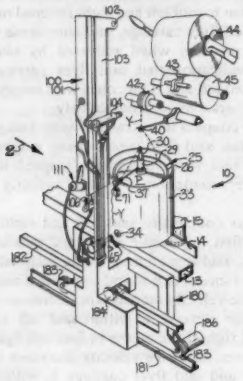
4,236,374
YARN TAKE-UP AND SUPPLY MECHANISM FOR USE WITH TEXTILE MACHINES

Lothar Marbacher, Krefeld, Fed. Rep. of Germany, assignor to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 3,997
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1978, 2802205
The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.
Int. Cl.³ D01H *15/00, 1/10*
U.S. Cl. 57—279 21 Claims

2. In a textile yarn processing machine, such as a two-for-one twister or the like, having a plurality of spindle assemblies each including a driven rotating rotor mechanism, a stationary carrier mechanism for carrying a hollow supply package of yarn, and an elongate yarn passageway passing downwardly through the top of said carrier mechanism along the axis of said spindle assembly and radially outwardly through said rotor mechanism for receiving the yarn from the supply package therethrough and then upwardly along the outside of said carrier mechanism for forming a rotating balloon of yarn dur-

ing yarn processing, and having selectively-operable pneumatic threading mechanisms for being operated to automatically thread yarn withdrawn from the supply package through said passageway during threading-up of said spindle assembly by creating a suction through the yarn entry portion of said passageway and a positive air stream through the yarn exit portion of said passageway; the combination therewith of a yarn take-up and supply mechanism for cooperation with said threading mechanisms and being characterized by a construction for receiving a free end of the yarn as it emerges from the supply package, taking-up a loop of a predetermined length of the yarn and completely releasing the free end and taken-up length of the yarn to the textile machine in a substantially tension-free condition at the yarn entry portion of said passageway through said spindle assembly for receipt by said threading mechanisms for threading-up of said textile yarn processing machine, said yarn take-up and supply mechanism comprising:



housing means;

clamping means carried by said housing means for receiving the free end of yarn extending from the supply package in said spindle assembly of said textile machine and for clamping the free end of the yarn;

driven take-up means carried by said housing means for engaging the yarn inwardly of the clamped free end and for moving away a predetermined distance to carry the yarn and form a loop of predetermined length of the yarn;

means carried by said housing means for releasing said clamping means and the free end of yarn for presentation to the textile machine at the area of the yarn entry portion of said passageway of said spindle assembly of said textile machine; and

means carried by said housing means for releasing the loop of yarn from said take-up means for presentation in a substantially tension-free condition to the textile machine.

4,236,375

ELECTRONIC WATCH

Shojiro Komaki, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

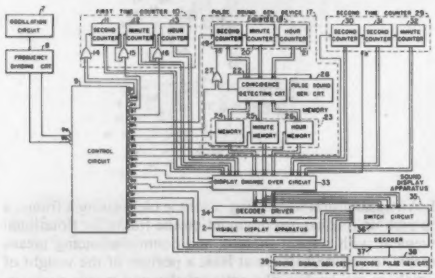
Filed Sep. 16, 1977, Ser. No. 834,004

Claims priority, application Japan, Sep. 20, 1976, 51-112760

Int. Cl.³ G04C *21/12*

U.S. Cl. 58—23 R **5 Claims**

1. An electronic watch comprising: an oscillator circuit for developing an oscillating output signal; a dividing circuit for dividing the oscillator output signal to develop a time standard signal; a present time counter circuit receptive of the time standard signal for developing a count representative of present time and responsive to a correction pulse for correcting the developed count; a pulse sound generator comprised of a second time counter circuit for developing a count representative of time, a memory circuit having contents representative of a predetermined time, a coincidence detecting circuit for developing a coincidence signal when the contents of said second time counter circuit and the contents of said memory circuit coincide, and a sound generating circuit for developing sound pulses in response to the coincidence signal; a chronograph counter responsive to control signals for operating in a chronograph mode; visual display means for visually displaying time; display switching circuit means for switching between said present time counter circuit, said memory circuit and said chronograph counter for applying the contents of the selected one thereof to said visual display means for visually displaying present time, the predetermined time and a time interval measured by said chronograph counter; and control circuit means operable for developing and applying selected



ones of the above-mentioned control signals and the correction pulse for controlling operation of the electronic watch, wherein said control circuit means is effective for applying a control signal to said second time counter circuit to operate said second time counter circuit in a counting mode to continually count, and wherein said pulse sound generator includes resetting means for applying the coincidence signal from said coincidence detecting circuit to reset said second time counter circuit each time coincidence is detected between the contents of said second time counter circuit and said memory circuit whereby said sound generating circuit repetitively generates a sound each time the coincidence signal is developed after successive time intervals determined by the content of said memory circuit.

4,236,376

ARRANGEMENT FOR REGULATING SUPERCHARGER AIR PRESSURE

Ulrich Henke, Alsdorf, and Reinhard Meyer, Grevenbroich, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed May 10, 1979, Ser. No. 37,755

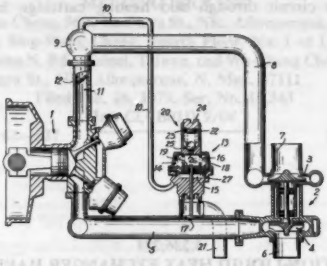
Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822207

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—602 **2 Claims**

1. An arrangement for regulating the supercharger air pressure in a combustion engine operated with exhaust gas supercharge and equipped with an exhaust gas turbosupercharger, comprising: a supercharger and an exhaust gas turbine, said regulating arrangement comprising a first valve controlling an exhaust gas bypass to said exhaust gas turbine; said first valve having a pressure unit and diaphragm means dividing said pressure unit into two chambers; one side of said diaphragm means being charged with supercharger air pressure; a first spring for loading the other side of said diaphragm means; calibrated opening means passing through said diaphragm

means for interconnecting said two chambers; and a second valve for connecting one of said chambers holding said first



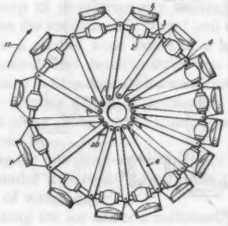
spring to atmosphere, said second valve comprising a nonreturn ball valve.

4,236,377

HEAT EXPANSION MACHINE

Friedrich Weinert, 219-19 131st Ave., Jamaica, N.Y. 11413

Filed Apr. 3, 1978, Ser. No. 893,047
Int. Cl.³ F03G 7/02
U.S. Cl. 60—641 **4 Claims**



1. A gravity motor utilizing a heat expansion mechanism comprising a frame, a rotational shaft supported by the frame, a drive gear connected to said rotational shaft, said drive gear having a plurality of teeth around the outer periphery thereof, a plurality of drive bars, the drive bars at one end thereof being pivotally secured to the drive gear around the circumference of the drive gear to permit pivoting of the drive bars within a predetermined range limited by two teeth of the drive gear and the other end of each of the drive bars extending radially outwardly therefrom, and a plurality of expansion means, at least one expansion means being respectively situated between the drive bars to change the distance between the drive bars, whereby when one or more expansion means is actuated continuously on one side of the motor by heating or cooling the expansion means, the motor becomes successively unbalanced between the two sides to thereby move continuously.

4,236,378

SECTORAL COMBUSTOR FOR BURNING LOW-BTU FUEL GAS

Robert L. Vogt, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

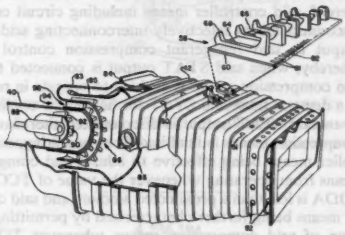
Filed Mar. 1, 1978, Ser. No. 882,073
Int. Cl.³ F02C 7/18
U.S. Cl. 60—757 **11 Claims**

1. A combustion chamber operable to burn low-BTU fuel gas in a gas turbine comprising:

an outer shell wall of corrugated construction;

a liner wall comprising a plurality of liner panels each having an upstream end supported in overlapping relationship with the downstream end of an adjacent liner panel, said liner wall housed coaxially within said shell wall and having an outer surface and an inner surface, said shell wall and said liner wall each having a cross section of a shape substantially equal to an annular sector of said gas turbine;

said liner wall defining internally thereof a combustion zone and further defining between said liner wall and said shell wall a coolant channel for the flow of air in countercurrent relationship to flow in said combustion zone for cooling said liner wall outer surface;



liner attachment means for supporting said liner wall from said shell wall said liner attachment means including a plurality of panel supports comprising an elongated rib or bulb rigidly attached to said inner wall and aligned approximately parallel to the direction of the countercurrent coolant flow in said coolant channel;

air supply means for introducing combustion air to said combustion zone; and

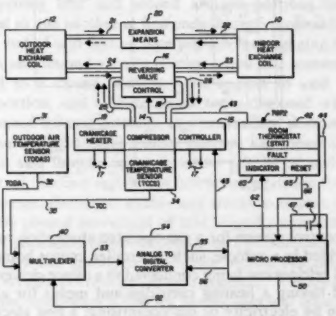
fuel supply means for introducing fuel gas and liquid fuel to said combustion zone.

4,236,379

HEAT PUMP COMPRESSOR CRANKCASE LOW DIFFERENTIAL TEMPERATURE DETECTION AND CONTROL SYSTEM

Dale A. Mueller, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 4, 1979, Ser. No. 868
Int. Cl.³ F04B 49/10; F25B 49/00
U.S. Cl. 62—126 **8 Claims**



1. A compressor crankcase low differential temperature detection and control system (hereinafter "control system") for a reverse cycle refrigeration system (hereinafter "system") for heating and cooling an enclosure wherein said system comprises refrigerant compression means including crankcase heating means, refrigerant compression control means, an indoor coil, an outdoor coil, and refrigerant conduit means connecting said compression means and said coils, said control system comprising:

outdoor air temperature sensing means (hereinafter "TODAS") having an output indicative of outdoor air temperature (hereinafter "TODA");

compressor crankcase temperature sensing means (hereinafter "TCCS") having an output indicative of the temperature (hereinafter "TCC") of the crankcase of said refrigerant compression means;

enclosure temperature sensing means (hereinafter "STAT") having an output indicative of a demand for heating or cooling of the enclosure; and

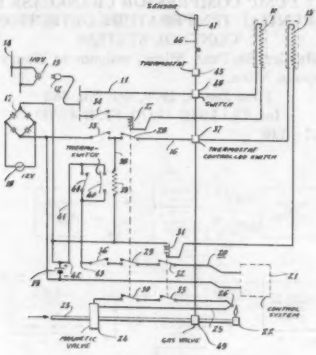
controller means having operative connections to said TODAS, TCCS, and STAT so as to receive the outputs thereof, said controller means including circuit connect-disconnect means selectively interconnecting said STAT output to said refrigerant compression control means whereby, when said STAT output is connected thereto, said compression means is enabled to operate in response to a demand from said STAT for heating or cooling and, when said STAT output is disconnected therefrom, said compression means is inhibited from operating, said controller means being effective to inhibit said compression means from operating whenever the value of TCC minus TODA is less than a preselected amount, and said controller means being further characterized by permitting operation of said compression means whenever TODA is greater than a predetermined value.

4,236,380

CONTROL SYSTEM FOR AUTOMATIC DELAYED OPERATION OF A GAS OPERATED ABSORPTION REFRIGERATOR

Peter E. Blomberg, Stockholm, and Magnus C. W. Lindmark, Stocksund, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Jun. 14, 1979, Ser. No. 48,666
Claims priority, application Sweden, Jun. 14, 1978, 7806849
Int. Cl.³ F25B *15/00, 27/00*
U.S. Cl. 62—148 **5 Claims**



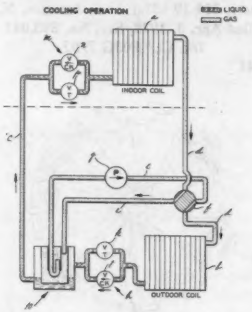
1. A control system for a gas-operated absorption refrigerator provided in a vehicle, such as a trailer, motor home or the like, said refrigerator being connected to a motor-driven generator and having a heating cartridge and means for alternate operation by electricity or gas comprising: a first electric circuit having said heating cartridge therein and including a thermostatically controlled switch and a magnetic coil, a second electric circuit having a safety device for said gas supply and being provided with a contact wherein when said magnetic coil is energized said coil holds said contact in said second electric circuit in an open condition, and an electric control circuit having a control system therein, said safety device for the gas supply in said second electric circuit maintaining said gas burner operative when in a closed condition, said control system functioning in such a manner that the gas burner is automatically operated if the first circuit with the heating cartridge is opened, and means for delayed closing of said electric control circuit through said control system when said first circuit through said heating cartridge has been opened.

4,236,381

SUCTION-LIQUID HEAT EXCHANGER HAVING ACCUMULATOR AND RECEIVER

Sadik S. Imral, St. Louis, and Asadulla R. Khan, Ballwin, both of Mo., assignors to Intertherm Inc., St. Louis, Mo.

Filed Feb. 23, 1979, Ser. No. 14,577
Int. Cl.³ F25B *29/00*
U.S. Cl. 62—324R **2 Claims**



1. For use in a vapor compression heat pump system having indoor and outdoor refrigeration coils coupled by a liquid refrigerant line having a pair of throttling assemblies and by a suction refrigerant line having a compressor and a reversing valve,

a suction-liquid heat exchanger comprising

an outer high-pressure vessel having for coupling in the liquid refrigerant line between such pair of throttling assemblies,

a first lower port spaced upwardly from the vessel lower end, and

a second upper port displaced upward from the first port, in combination with

an inner liquid-accumulating closed vessel extending downward within the outer vessel to a lower end at a level below the outer vessel lower port, and having, for coupling in the suction line,

an upper inlet, and

a suction outlet tube having an open end spaced above the lower end of the inner vessel,

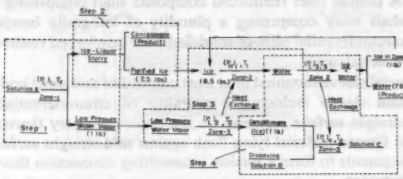
whereby, upon coupling the inner vessel in the suction line and the outer vessel in the liquid line, with its lower port coupled by one throttling assembly to the indoor coil and its upper port by the other throttling assembly to the outdoor coil, on cooling operation when liquid line refrigerant flow is from the upper port to the lower port, the liquid refrigerant level in the outer vessel is normally above the level of the lower end of the inner vessel and substantial heat is exchanged, though less than on heating operation.

4,236,382

SEPARATION OF AN AQUEOUS SOLUTION BY THE IMPROVED VACUUM FREEZING HIGH PRESSURE ICE MELTING PROCESS

Chen-Yen Cheng, 9605 La Playa St., NE., Albuquerque, N. Mex. 87111; Sing-Wang Cheng, Fourth Floor, No. 1 of Lane 479, Fu-Hsing N. Rd.,, Taipei, Taiwan, and Wu-Cheng Cheng, 9605 La Playa St., NE., Albuquerque, N. Mex. 87111

Filed Feb. 26, 1979, Ser. No. 15,343
Int. Cl.[2] B01D 9/04
U.S. Cl. 62—537 **6 Claims**



1. A process of subjecting an aqueous mixture to freezing and melting operations that comprises:

1. a first step of simutaneously flash vaporizing and freezing an aqueous mixture derived from the feed mixture (A-solution) in a first zone (Zone-1) under a reduced pressure to thereby form a low pressure water vapor and a mass of ice;
2. a second step of simultaneously melting a mass of ice derived from the ice formed in Step 1 and the ice obtained in Step 3 in a second zone inside of a heat conductive conduit (Zone-2) and desublime the low pressure water vapor obtained in Step 1 in a third zone outside of the heat conductive conduit (Zone-3) to thereby simultaneously form a melt phase in the second zone and a desublimate in the third zone by
   (a) admitting the low pressure water vapor from Zone-1 to Zone-3 under a pressure lower than the triple point pressure of water, and
   (b) maintaining the ice under a sufficiently high pressure such that the melting temperature of the ice is lower than the desublimation temperature of water vapor,
   the heat released in the desublimation operation being utilized
   in the high pressure melting of ice;
3. a third step of simultaneously dissovling the desublimate in a dissolving solution (B-Solution) in Zone-3 and solidifying water in Zone-2 to thereby form a C-solution and ice in the two zones respectively by
   (a) pressure isolating Zone-3 from Zone-1,
   (b) bringing a quantity of the dissolving solution in contact with the desublimate in Zone-3, and
   (c) reducing the pressure in Zone-2 so that the freezing temperature in Zone-2 is higher than the dissolution temperature in Zone-3,
   the heat released in the freezing of water in Zone-2 being utilized
   in supplying the heat needed in dissolving the desublimate in Zone-3.

4,236,383

SOLAR ENERGY RECEIVER FOR A STIRLING ENGINE

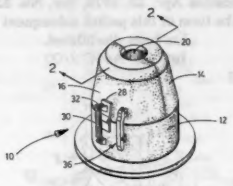
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and M. Kudret Selcuk, La Canada, Calif.

Filed Apr. 6, 1979, Ser. No. 27,559
Int. Cl.[3] F03G 7/02
U.S. Cl. 60—641 **10 Claims**

1. In combination with a Stirling engine characterized by a heat exchanger, a receiver comprising:

A. means including an enclosure defining a cavity having an acceptance aperture for a concentrated beam of solar radiation and an internally reflective surface for flux distribution within said cavity; and

B. flux density reduction means for reducing the density of



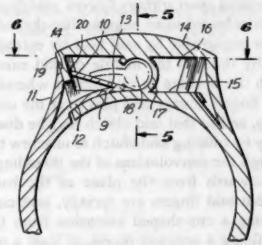
radiation flux within the cavity including means for initiating an enlargement of said acceptance aperture in the presence of temperatures elevated above a selected magnitude.

4,236,384

LOCKING ASSEMBLY FOR ARTICLE OF JEWELRY

Arthur R. Daub, 59 Burns Ave., Hicksville, N.Y. 11801

Filed Sep. 1, 1978, Ser. No. 939,128
Int. Cl.[3] A44C 5/00
U.S. Cl. 63—7 **6 Claims**



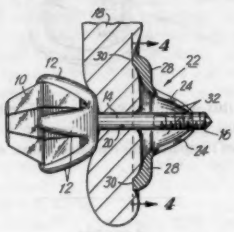
1. An assembly for use as an article of jewelry having an associated ornamental portion affixed to said article, said article comprising first and second arcuate portions hingedly connected to one another at first ends thereof; means affixed at a second end of said first arcuate portion for engaging locking means on said second arcuate portion when said second end is advanced to a closed position with respect to said second arcuate portion; said locking means being disposed within an interior space formed between said ornamental portion and a top section of said second arcuate portion; key means adapted to fit into said interior space to cause release of said means affixed at said second end of said first arcuate portion from said locking means, thereby to enable said article to assume an open position by pivotal movement of said hingedly connected first arcuate portion, said means affixed to said first arcuate portion comprising a leaf spring member, said second end portion of said first arcuate portion including a generally Y shaped working portion comprising a first leg having said leaf spring member mounted at the terminus thereof, said leaf spring member having a normal position with its free end biased away from said first leg, and a second leg having a terminus, and abutment means extending below said ornamental means and being partially disposed across an entrance portion of said interior space, said abutment means having an inner surface adapted to engage said free end of said leaf spring member after said leaf spring member enters said interior space, and an outer surface against which said terminus of said second leg abuts to complete locking of said first arcuate portion to said ornamental portion.

4,236,385

EARRING

Alvin Block, Bedford, N.Y., assignor to Intimate Jewels Inc., Katonah, N.Y.

Continuation of Ser. No. 875,246, Feb. 6, 1978, abandoned. This application Apr. 23, 1979, Ser. No. 32,652
The portion of the term of this patent subsequent to Oct. 9, 1996, has been disclaimed.
Int. Cl.³ A44C 7/00
U.S. Cl. 63—12 3 Claims



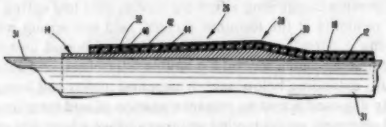
1. An earring for pierced ears which comprises an ornament, a rectilinear cylindrical post, said post extending from attachment to said ornament, at least a portion of the outer surface of said post having a helical threading, and a clutch, said clutch having a central opening about which are radially arrayed a plurality of spaced apart springy fingers, said fingers extending to terminal attachment to an annular disc-shaped base, so that said clutch is engageable by said post by extending said post axially initially through the middle of said annular base and then through the opening in said clutch whereby the tips of said springy fingers engage and pass over the convolutions of the threading, and so that said clutch may be disengaged from said post only by rotating said clutch to unscrew the tips of said fingers through the convolutions of the threading, said fingers extending outwards from the plane of the base and being curved, so that said fingers are springy, said curved springy fingers defining a cup-shaped extension from the base, said extension defining a concave recess, at least a portion of the threaded portion of said post extending through said concave recess, and a circular lip, said lip depending from the perimeter of said base and being of thicker cross-sectional dimension than said base, the free end of said lip terminating with a substantially flat planar surface for contact with and for pressing into the earlobe of said pierced ear, said surface being parallel to the plane of said base.

4,236,386

FIBER REINFORCED COMPOSITE SHAFT WITH METALLIC CONNECTOR SLEEVES MOUNTED BY A POLYGONAL SURFACE INTERLOCK

Derek N. Yates, Los Gatos, and John C. Presta, San Jose, both of Calif., assignors to Celanese Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 43,557
Int. Cl.³ A44C 13/00; B65H 81/00; F16L 9/00
U.S. Cl. 64—1 S 10 Claims



1. A method of forming a tubular fiber reinforced composite shaft comprising the steps of:

providing a metal sleeve having a plurality of circumferentially straight surface segments on the outer periphery thereof;

positioning said metal sleeve upon a segment of a mandrel;

applying fibrous material bearing a non-solidified resinous material to said mandrel and over said circumferentially straight surface segments of said sleeve;

solidifying said resinous material with portions thereof lying flush against said circumferentially straight surface segments to create a torsion transmitting connection with said metal sleeve; and

removing said mandrel.

6. A tubular fiber reinforced composite shaft comprising:

a shaft body comprising a plurality of integrally bonded circumferential plies of solidified fiber reinforced resinous material; and

a metal sleeve mounted in at least one end of said shaft body, said sleeve including a plurality of circumferentially straight surface segments on the outer periphery thereof;

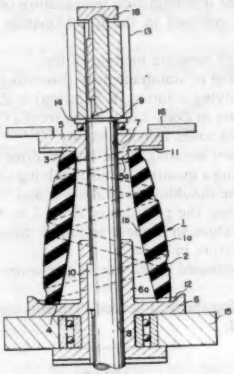
said fibrous material lying flush against said straight surface segments to form a torsion transmitting connection therebetween.

4,236,387

ENERGY STORING DEVICE

Suehiro Takatsu, c/o Takatsu Seisakusho, 22, 3-chome, Nanabancho, Minato-ku, Nagoya-shi, Aichi-ken, Japan

Filed Jan. 26, 1979, Ser. No. 6,747
Claims priority, application Japan, Jan. 30, 1978, 53-9169
Int. Cl.³ F16D 3/28
U.S. Cl. 64—11 R 3 Claims



1. An energy storing device comprising an elastic energy storing cylinder of a diameter gradually increasing from one end thereof to the other which has a spiral groove in the outer surface thereof, first and second flanges fitted into both end portions of said cylinder so that they cannot be rotated relative to said cylinder, a spindle passed through said cylinder and said flanges so that it is rotatable and slidable with respect to said first flange but non-rotatable with respect to said second flange, and a gear non-rotatably fitted around one end of said spindle.

4,236,388

SEPARABLE THREE-SECTION TELESCOPIC DRIVE SHAFT

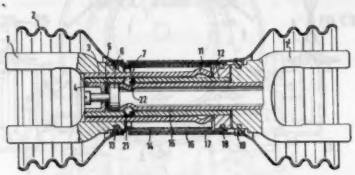
Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Jan. 23, 1979, Ser. No. 5,701

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1978, 2803822

Int. Cl.³ E21B *17/07*; F16D *3/06*

U.S. Cl. 64—23 **5 Claims**



1. Separable three-section telescopic drive shaft for the transmission of torque, such as used for driving agricultural implements, wherein said drive shaft is extendible between a retracted position and an extended position and comprises an axially extending inner section, an outer section laterally enclosing said inner section in the retracted position, and an intermediate section spaced between said inner section and said outer section in the retracted position, at least said outer and intermediate sections being tubular, and means for limiting the axial movement of said intermediate section relative to said inner and outer section, wherein the improvement comprises that said intermediate section has at least one cut-out formed therethrough, said means for limiting axial movement comprises a locking ball radially movably supported is said cut-out, said locking ball having a diameter greater than the wall thickness of said intermediate section, each of said inner section and said outer section having a recess therein located in the path of axial travel of said locking ball as said shaft moves between the retracted and extended positions, the depth of the recesses in said inner and outer sections being less than the radius of said locking ball, said locking ball serving to secure said intermediate section alternately to one of said inner section and outer section, and means for clamping said inner section and intermediate section together when said locking ball is seated in said cut-out and said recess in said inner section.

4,236,389

CIRCULAR KNITTING MACHINE FOR STOCKINGS OR THE LIKE, HAVING RAISING CAMS WHICH CAN BE MOVED BOTH RADIALLY AND ANGULARLY

Giovanni Chietti, Florence, Italy, assignor to Macchine Tessili Circolari MATEC S.p.A., Italy

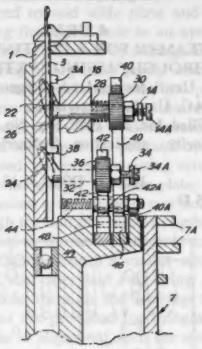
Filed Dec. 14, 1978, Ser. No. 969,428

Claims priority, application Italy, Dec. 16, 1977, 9660 A/77

Int. Cl.³ D04B *15/68*

U.S. Cl. 66—42R **11 Claims**

1. An apparatus for selectively raising needles in a needle cylinder of a circular knitting machine comprising a control butt associated with each of the needles at least at one level thereof for raising each of the needles, a rotatable member arranged concentrically about at least a part of said needle cylinder, a raising cam member for engaging said butts of selected needles being independently positionable radially and axially of said needle cylinder for movements between a position in engagement with said butts of selected needles and a position totally out of engagement with said needles, means for rotatably and axially supporting said raising cam member adjacent said needle cylinder and control means operatively connected to said rotatable member and being engageable with said raising cam member for rotatably and axially moving said



raising cam member in response to the rotation of said rotatable member.

4,236,390

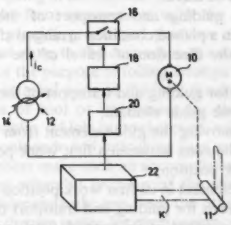
KNITTING MACHINE

Jochen Blank, Pluederhausen, and Dieter Bobe, Filderstadt, both of Fed. Rep. of Germany, assignors to Terrot Strickmaschinen GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 9, 1978, Ser. No. 959,073

Int. Cl.² D04B *15/88, 35/10*

U.S. Cl. 66—149 R **8 Claims**



1. Apparatus for controlling the material tension in a knitting machine, particularly a circular knitting machine, having a knitting device with at least two operating modes, and means to take off the knitted material under tension, the apparatus comprising:

a d.c. motor to drive the material take-off means, the torque of the motor being proportional to the average motor armature current and effecting a proportional tension in the material through the material take-off means;

first means for generating a direct current of controlled magnitude;

second means for interrupting the controlled-magnitude direct current according to one at least two predetermined pulse duty factors to produce a pulsed current yielding a different average current for each of the two pulse duty factors;

third means for applying the pulsed current to the d.c. motor as the motor armature current to effect a different constant tension in the material for each different pulsed current; and

fourth means responsive to each of at least two of the operating modes of the knitting device for controlling the second means to interrupt the controlled-magnitude current according to a predetermined one of the pulse duty factors for each of the two operating modes, whereby the the material is maintained at a different predetermined con-

stant tension for each of the two operating modes of the knitting device.

4,236,391

STEAMER FOR A CONTINUOUSLY THROUGHPASSING TEXTILE WEB

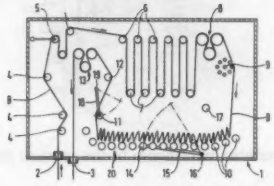
Johann Stöbi, Uzwil, Switzerland, assignor to Maschinenfabrik Benninger AG, Uzwil, Switzerland

Filed Jan. 25, 1980, Ser. No. 115,757

Claims priority, application Switzerland, Feb. 6, 1979, 1141/79

Int. Cl.³ D06B *3/10*

U.S. Cl. 68—5 D **8 Claims**



1. A steamer for treating a continuously through-passing textile web, comprising:

a substantially closed housing having an inlet means and an outlet means for the web and through which travels the web undergoing treatment;

a group of deflection rolls arranged within the housing for the substantially zig-zag guiding of the web in an open width condition through the housing in a predetermined direction of travel;

means for guiding and transport of the web deposited thereon in a plaited condition arranged after the deflection rolls in the direction of travel of the web through the housing;

said means for guiding and transport of the web comprising at least one guide element;

means for moving the guide element from externally of the steamer housing between a first work position and a second work position;

said guide element in its first work position constituting part of the means for guiding and transport of the web; and

said guide element in its second work position being arranged above said means for the transport and guiding of the web and supporting the web in spaced relationship from the guiding and transport means.

4,236,392

CONTINUOUS PROCESSING APPARATUS FOR TREATMENT OF KNIT FABRIC MATERIAL

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Nov. 15, 1979, Ser. No. 94,456

Claims priority, application Japan, Nov. 27, 1978, 53-146314

Int. Cl.³ D06B *3/24*

U.S. Cl. 68—5 E **1 Claim**

1. A continuous processing apparatus for carrying out continuous hydro-thermic treatment of a tubular knit fabric material, said apparatus comprising:

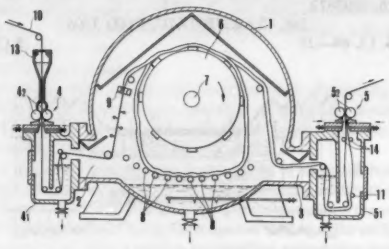
a high pressure steamer drum body having a fabric material inlet, a middle part, and a fabric material outlet;

a driving drum rotatably disposed in said middle part;

a plurality of fabric material receiving rolls which are arranged beneath said driving drum to guide and convey said fabric material in a spiral manner around said driving drum;

a pot eye which is disposed close to said fabric material inlet, said pot eye being arranged to wring said tubular knit fabric material, which enters said pot eye in a flattened state, into a rope-like shape;

an air pressure supply means disposed close to said fabric material outlet, said air pressure supply means being arranged to supply air pressure to the inside of said rope-like shape of the fabric material to swell it into a tubular shape; and



a fabric material flattening and spreading means which is disposed closer to said outlet than said air pressure supply means and is arranged to spread out said tubular knit fabric material into a flattened shape spreading in the direction of the breadth thereof.

4,236,393

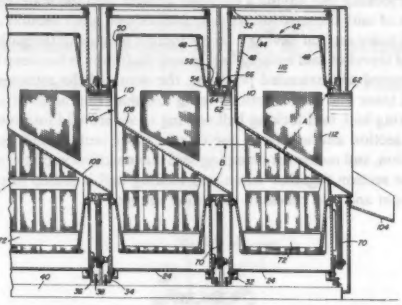
CONTINUOUS TUNNEL BATCH WASHER

James M. Katzfey, Kenner, La., assignor to Pellerin Milnor Corporation, Kenner, La.

Filed Jul. 19, 1979, Ser. No. 59,272

Int. Cl.³ D06F *21/04, 31/00*

U.S. Cl. 68—27 **9 Claims**



1. A longitudinally extending continuous tunnel batch washer comprising a plurality of longitudinally aligned modules with inlet means at one end of the washer for feeding articles to be laundered into the washer and discharge means at the opposite end of the washer, each module including a stationary casing and a rotatably supported drum within the casing with the drum being supported for oscillatory and rotary movement about a horizontal axis, each drum including spaced end walls, each end wall of each drum including a large opening, means forming a connection between the openings to provide communication between adjacent modules, and each drum including a transfer chute mounted therein retaining articles to be laundered during oscillation and transferring the article from one drum to an adjacent successive drum during unidirectional rotation, said chute including an inclined wall having a discharge end connected to a portion of the periphery of the opening in one end wall of the drum and an end wall connecting the opposite end of the inclined wall to the opening in the opposite end wall of the drum with the end wall of the chute occupying a small portion of the opening in the end wall

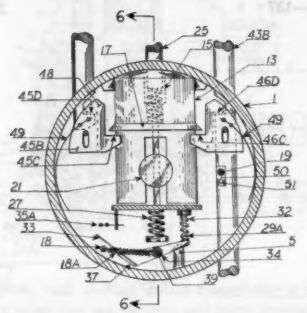
of the drum to reduce interference with incoming articles, said inclined wall of the chute being spirally configured circumferentially of the drum with at least one side edge of the inclined wall being spaced from the periphery of the drum.

4,236,394

PADLOCKS AND LOCKS IN GENERAL

Richard P. Harrington, and Russell J. Harrington, both of 1930 3rd St., Alexandria, La. 71301

Filed Feb. 13, 1978, Ser. No. 877,226
Int. Cl.[2] E05B *37/06*
U.S. Cl. 70—25 **10 Claims**



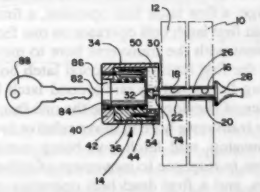
1. A combination lock comprising a looped shackle movable between a first locked position, a second unlocked holding position and a third fully released position after zero, or some other preselected number on the dial face has been rotated to an index mark on front side of the case, said holding means being a guided pin engaged with a slot in long leg of the shackle releasable into an apeture on under side of the dial; locking means movable into and out of engagement with provided notches in legs of the shackle; said locking means being composed of solid latching hooks at the top end, with unlocking lugs at the bottom end, having sides provided with lost motion slots therein to accomodate stationary pivot pins secured to parts of the case, fence means including a fence for moving the locking means out of locking engagement with said notches of the shackle; a calibrated dial rotatable on a common axis with a plurality of locking tumblers mounted axially on a centrally located shaft perpendicular to face of the dial; means for sequentially rotating said tumblers to and fro for aligning the gates of all the tumblers with the fence, for movement of said fence into said gates for moving the locking means out of engagement with said notches of the shackle, said gates being located on the perifery of outer disks of the tumblers, frictionally held to inner hubs of the tumblers to allow provided driving means between the dial and tumbler hubs to new selected positions relative to gates of the dial; means for dialing and activating a master tumbler means for stopping all the disks of the said locking tumblers for slipping all of the said hubs to a preselected number on the dial face; and means for releasing the said disks preparatory to rotating with the fence for opening of the lock; means for pivoting the locking means into deeper engagement with notches in the shackle legs if and as the shackle is vigorously pulled outward of the case while the locking means is engaged with notches of the shackle leg; and means for wedging the locking means tighter into notches of the shackle legs if the shackle is forcefully pulled outward against inner surface of the case when the locking means is engaged with the shackle notches as aforesaid; means for detecting each circumferentially spaced graduation on the dial face as the dial is rotated and means for effecting a discernable pause at each such graduation, thus diminishing meed for close scrutiny of the dial face in so doing; means for blocking the dial from rotation prior to contact of the fence with disk rims of the tumblers thus foiling all attempts by pick-locks for feeling or listening out positions of tumbler disk gates relative to the fence; means for providing a guided mounting slide plate with a preloaded safety compression spring operable between an unlatching bar secured to said slide plate and an actuating finger plunger passing through a hole in an upturned end of said slide plate and confined therein by a flange at inside end of the plunger, said spring being only partly compressed, will compress further when internal parts are not properly positioned to function, thus serving to protect internal mechanism of the lock from damage; a portion of the upturned slide plate is then turned inward to form a flat pedestal upon which the fence means is mounted; compressive spring return means are provided at the opposite end of the slide plate; which return spring functions between a spring well cup secured to back case plate aligned with the end of a master combination means actuating rod (secured to the said plunger at top end of the case) which spring then activates a master actuating means near bottom end of the case, said rod being rotatable and axially guided by hole through the locking tumbler shaft mounting post; means are provided for bringing a provided compression spring in to alignment with the afore mentioned master actuating knob on an arm; and means for lifting the master fence pin and rotating a provided sleeve independantly rotatable on the master fence pin; after said means has moved said lift arm a given distance up the said ramp the said sleeve being rotatable by a provided pin secured into the said master fence pin activates a toggle spring for rotating said sleeve clockwise leaving the drive pin and master fence lift arm behind, due to a lost motion rectangular slot in which the said pin operates, through said means a set of locking tumbler disk stopping hooks are resiliently brought to bear against the locking tumbler disks; after the said disk stopping hooks have served to slip the disks to a preselected position as aforesaid; means are provided for reactivating said toggle spring to throw the toggle spring in the opposite direction for withdrawing the said hooks from engagement with the gates of said disks; means for providing enlarged portions of the shackle legs outside of and close to the case when the shackle is in its locked position for the purpose of foiling attemps by pick-locks to gain access to internal parts of the lock through use of any type or thickness of tool or instrument for the purpose of unlatching the hooks, which in conjunction with shape and location of the hook ends and unlocking lugs at lower end of the latching members make such an accomplishment vertually impossible; means whereby latching of the shackle holding hooks function independantly one from the other, thus in the event a pick-lock devises means for disengaging one hook from the shackle, the other hook is not effected thereby.

4,236,395

BOLT TYPE LOCK

Mauricio V. Avaiusini, 2031 S. 331st, Federal Way, Wash. 98003

Filed Mar. 5, 1979, Ser. No. 17,366
Int. Cl.[3] E05B *67/36*
U.S. Cl. 70—34 **6 Claims**



1. A bolt type lock comprising:

a bolt member comprising an elongated shank, a first abutment at one end of the shank, and a girth groove formed in an opposite end portion of said shank; and

a second abutment which is detachably connectable to the girth groove end of the shank, said second abutment com-

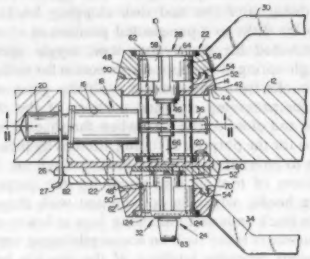
prising a pair of clasp members, pin means pivotally connecting the clasp members together for angular movement together and apart, and jaw means on said clasp members adapted for entering into said girth groove and grasping the bolt shank at the location when said clasp members are swung together about the girth groove portion of the shank, and key operated means lockable into a position about the clasp members when they are together about the girth groove portion of the bolt shank, so that said clasp members cannot be moved apart free from engagement with the bolt shank until and unless the key operated means is unlocked and removed from a position about the clasp members, said key operated means comprising an outer housing member defining an inner cavity which is open at one end and is bounded at its opposite end by an end wall, and an annular inner member within said cavity to which said clasp members are attached by means of said pin means, said annular inner member and said clasp members being telescopically received within the inner cavity of the outer housing member.

4,236,396

RETROFIT LOCK

Walter E. Surko, Jr., Southington, and LeRoy Hart, Farmington, both of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Oct. 16, 1978, Ser. No. 950,319
Int. Cl.[2] E05B *3/00, 9/00, 59/00*; E05C *1/16*
U.S. Cl. 70—107 **18 Claims**



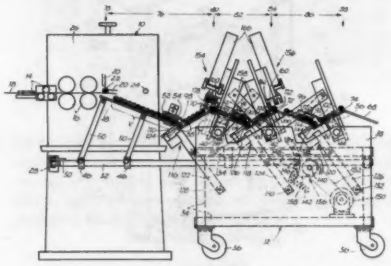
18. A lockset for a door having a transverse bore therethrough and another bore opening through one edge of the door and communicating with the transverse bore, said lockset comprising a dead bolt and a latch bolt, one of the bolts comprising said dead bolt and said latch bolt being adapted for mounting in said other bore for movement between projected and retracted positions relative to the one edge, the other of said bolts being adapted for mounting in side-by-side relation to said one bolt and generally adjacent a face of the door for movement between projected and retracted positions relative to the one edge, a first latch bolt operator, a first housing for supporting said first latch bolt operator on one face of the door and in alignment with the transverse bore to move relative to the door and the first housing, a second latch bolt operator, a second housing for mounting said second latch bolt operator on another face of the door opposite the one face and in alignment with the transverse bore to move relative to the door and the second housing, said latch bolt being movable to a retracted position in response to movement of either of the latch bolt operators, and a first dead bolt operating unit operably connected to said dead bolt for moving said dead bolt between projected and retracted positions in response to operation of said first dead bolt operating unit, the improvement comprising said first dead bolt operating unit being mounted in fixed position on said first housing, said first latch bolt operator being journalled on said first dead bolt operating unit for angular movement relative thereto, and said first housing cooperating with said first latch bolt operator to define an envelope containing said first dead bolt operating unit.

4,236,397

METHOD OF AND APPARATUS FOR PRODUCING COIL SPRINGS WITH EYELETS

Gerhard Lange, Reutlingen, Fed. Rep. of Germany, assignor to Wafios, Maschinenfabrik, Wagner, Ficker & Schmid (GmbH & Co. KG), Reutlingen, Fed. Rep. of Germany

Filed Sep. 6, 1978, Ser. No. 940,122
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741534
Int. Cl.[3] B21F *35/02, 3/02*
U.S. Cl. 72—137 **23 Claims**



1. In a process for producing coil springs formed of wire and having eyelets, in which a spring body is wound from a length of wire in a winding station, said eyelets being formed on each end of the spring body in two forming stations, spring bodies, prior to the formation of the eyelets, being transferred from the winding station into a first forming station for forming one eyelet, the spring body provided with one eyelet being thereafter transferred from the first forming station to a second forming station for forming the other eyelet, the improvement comprising the steps of:

successively arranging a plurality of spring bodies between two successive forming stations with the axes of said spring bodies parallel to each other,

transferring a transport group of spring bodies comprising at least some of said spring bodies in a step-like manner at right angles to the direction of their axes in a straight line,

stepwise maintaining the transport group of spring bodies by separating the spring body of said transport group arriving at one of said forming stations and supplying a further spring body to said transport group,

wherein the transport group is formed only by some of the successively arranged spring bodies and transferring the transport group generally upwardly and wherein a supply group is formed from some of the remaining spring bodies and transferring the supply group by gravity, and

step-wise maintaining the supply group by separating the spring body of said supply group at a transport group and by supplying a further spring body one-by-one directly from the winding station to a rear end of said supply group without passing through an intermediate hopper or container.

4,236,398

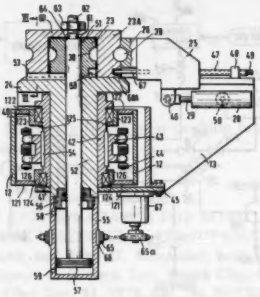
TUBE BENDING MACHINE

Rigobert Schwarze, Olpener Str. 460–474, 5000 Cologne 91, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,293
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 2746721
Int. Cl.[3] B21D *7/04*
U.S. Cl. 72—157 **8 Claims**

1. A tube bending machine comprising elongated support

means; a bending table mounted on said support means tiltable about an axis; template means mounted on said bending table for tilting with the latter about said axis, said template means comprising at least two coaxially arranged templates of different diameters movable relative to each other along said axis, one of said templates being an inner bending template and the other being an outer bending template at least partly surrounding said inner bending template; means for shifting said outer bending template in axial direction relative to said inner bending template, said shifting means comprising a lifting shaft extending along said axis through said inner template and being movable in direction of said axis for lifting said outer template above said inner template; clamping means on said bending table for clamping a portion of a tube to be bent against the respective template; guide means including releasable collet means for guiding a tube to be bent in longitudinal direction towards said template means; and means for moving said guide means in a direction transverse to said longitudinal direction.

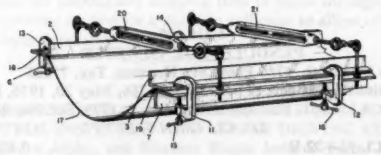


4,236,399

METHOD OF FORMING A PARABOLIC TROUGH

Orlan G. Williams, 3800 S. Decatur Blvd., #36, Las Vegas, Nev. 89103, and Robert L. Skaggs, 1106 Commanche Way, Boulder City, Nev. 89005

Filed Oct. 2, 1978, Ser. No. 947,358
Int. Cl.³ B21D *11/20*
U.S. Cl. 72—295 **9 Claims**



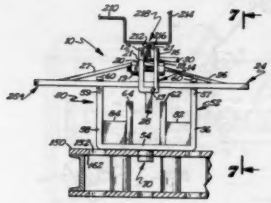
1. A method of forming a parabolic trough from an elongated strip of sheet aluminum or aluminum alloy comprises applying forces inducing equal bending moments to each lengthwise edge of the strip until the sheet has achieved a predetermined parabolic cross-section having a rim angle of at least 70°, said forces being the sole forces applied to the strip during bending, and heating the strip to a temperature above 400°F. to substantially stress-relieve the metal while maintaining the strip in parabolic configuration.

4,236,400

VEHICLE ANCHORING APPARATUS

Gerald A. Specktor, 409 Cleveland Ave. South, St. Paul, Minn. 55105

Division of Ser. No. 722,825, Sep. 13, 1976, Pat. No. 4,138,877, which is a continuation of Ser. No. 550,378, Feb. 18, 1975, abandoned. This application Jan. 8, 1979, Ser. No. 1,804
Int. Cl.³ B21D *1/12, 11/22*
U.S. Cl. 72—461 **20 Claims**



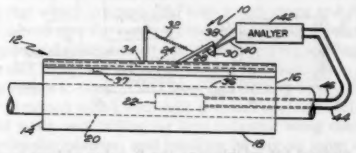
1. Apparatus for anchoring a vehicle to a support surface comprising, in combination: an elongated member for attachment to a portion of the vehicle, with the elongated member having an axis and including at least two abutment wings integrally attached to and projecting from the elongated member, with the wings being located on opposite sides of the axis; stop member for abutting with the abutment wings without physical connection for allowing the wings to slide in a vertical direction on the stop member for accepting a counterforce from the elongated member in a substantially horizontal manner through the abutment wings to the stop member to substantially reduce the necessity for use of supporting apparatus in straightening the frame of the vehicle; and means for attaching the stop member to the support surface.

4,236,401

FREQUENCY RESPONSE TESTER

Henry P. Bakewell, Jr., Old Saybrook, and Marguerite A. Johnson, Mystic, both of Conn., assignors to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 24, 1979, Ser. No. 42,173
Int. Cl.³ G01L *25/00*; H04R *29/00*
U.S. Cl. 73—1 DV **7 Claims**



1. An apparatus for determining the frequency response of an acoustic sensor of an acoustic line array comprising:

a generally elongated box having two opposite ends and the bottom thereof open and the top thereof having a longitudingal slot, said elongated box further adapted to enclose a portion of the acoustic line array including the acoustic sensor under test;

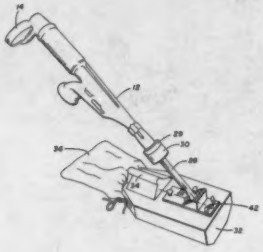
a slider means for applying a measured force upon the acoustic sensor of said acoustic line array, said slider means being slidable over the top of said elongated box; and

analyzer means for measuring the response of said acoustic sensor to the measured force as a function of frequency.

4,236,402
METHOD AND APPARATUS FOR TESTING ROCK TENACITY

Robert C. McGuire, Dublin, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 19, 1979, Ser. No. 31,575
Int. Cl.[3] G01N *3/30, 3/48*
U.S. Cl. 73—12 19 Claims



1. Method for performing strength tests on material to be mined, comprising the steps of:

(a) preparing a flat surface on the material to be tested,

(b) forming a groove in the flat surface,

(c) impacting the flat surface with a test device spaced apart from but in close proximity to the groove at a predetermined angle toward the groove and at a predetermined force which is at least as great as that necessary to break out material located between the impact point and groove,

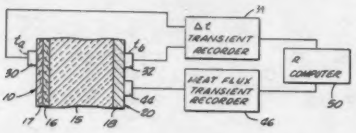
(d) repeating step (c) at a predetermined distance from the first impact, at substantially the same force and at substantially the same angle and distance from the groove,

(e) repeating steps (c) and (d), if necessary, until optimum spacing is determined by observing the amount of material broken out between adjacent impact points.

4,236,403
MEANS AND TECHNIQUES USEFUL IN ESTABLISHING R VALUES IN INSULATION

Heinz F. Poppendiek, La Jolla, Calif., assignor to Thermonetics Corporation, San Diego, Calif.

Filed Jun. 14, 1978, Ser. No. 915,524
Int. Cl.[3] G01N *25/18*
U.S. Cl. 73—15 A 2 Claims

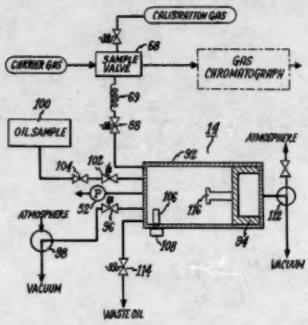


1. A method for establishing the R value of heat insulation which is located in situ in a wall of a building structure that is subjected to varying temperature conditions over a cyclical period during which heat flow through said wall is first in one direction and then later in an opposite direction which is opposite to said first direction, establishing a first series of values representing the difference in temperature at different successive times during such cyclical period when said heat flow is in said one direction and in said opposite direction, establishing a second series of values representing heat flow in the wall at said same difference successive times in said one direction and in said opposite direction, and combining said first and said second series of values to establish said R value.

4,236,404
DEVICE FOR MONITORING DISSOLVED GASES IN ELECTRICAL INSULATING LIQUIDS SUCH AS TRANSFORMER OILS

Marshall D. Ketchum, and Alexander J. Yerman, both of Scotia, N.Y., assignors to General Electric Company

Filed Aug. 31, 1976, Ser. No. 719,339
Int. Cl.[3] G01N *31/00*
U.S. Cl. 73—19 10 Claims



1. A monitoring device for monitoring dissolved gases in the electrical insulating liquid of an electrical apparatus comprising:

(a) valve means connected to an electrical apparatus to allow release of a portion of the electrical insulating liquid in such apparatus,

(b) a sample means connected to said valve for receiving a predetermined amount of electrical insulating liquid from the electrical apparatus,

(c) a gas extraction chamber connected to said sample means,

(d) means to evacuate said gas extraction chamber,

(e) means for moving said predetermined amount of liquid from said sample means to said gas extraction chamber,

(1) said gas extraction chamber evacuating said liquid to extract a portion of gases dissolved in said liquid,

(f) a gas chromatograph for receiving said extracted gases and analyzing the constituent parts thereof,

(g) sample valve means between said gas extraction chamber and said gas chromatograph for injecting a predetermined quantity of extracted gases into said gas chromatograph, and

(h) recording means for recording the results of said gas chromatograph analysis of said extracted gases.

4,236,405
PENDULUM DENSIMETER

Klaus Lunstroth, 4746 Pease St., Houston, Tex. 77023

Continuation-in-part of Ser. No. 688,266, May 20, 1976, Pat. No. 4,136,551. This application Jan. 2, 1979, Ser. No. 404
Int. Cl.[3] G01N *9/10*
U.S. Cl. 73—32 R 7 Claims

1. A device for measuring the specific gravity of a fluid comprising,

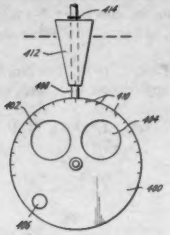
a circular disk having an axis and a bore therethrough and along said axis,

a shaft extending through said bore and said disk being rotatably mounted thereon,

said disk including two circular holes therein with both positioned on one side of a diameter of the disk for displacing the center of buoyancy of the disk from said axis,

a material mounted in said disk for displacing the center of

gravity of said disk from said center of buoyancy and from said axis, and



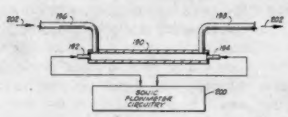
means for measuring the angular position of said disk relative to said shaft.

4,236,406

METHOD AND APPARATUS FOR SONIC VELOCITY TYPE WATER CUT MEASUREMENT

Philip W. Reed, and John D. Alexander, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Dec. 11, 1978, Ser. No. 967,938
Int. Cl.³ G01N *29/02*
U.S. Cl. 73—61.1 R **14 Claims**



9. In apparatus for determining quantitative and volumetric data of an oil-water mixture flowing in a conduit, the improvement comprising:

a metering section disposed in said conduit laterally offset from the main axis of said conduit;

sonic flowmeter means, disposed generally axially in said metering section, for measuring the speed of sound in a liquid flowing therethrough; and

means for periodically stopping flow of liquid through said metering section for a duration sufficient to allow oil and water separation.

4,236,407

PROCESS AND APPARATUS FOR THE QUALITY CONTROL INSPECTION OF VEHICLE DRIVING AXLES

Alessandro Alpini, and Giacomo Ruspa, both of Turin, Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Sep. 19, 1979, Ser. No. 77,063
Claims priority, application Italy, Oct. 19, 1978, 69400 A/78
Int. Cl.³ G01M *13/02*
U.S. Cl. 73—118 **13 Claims**

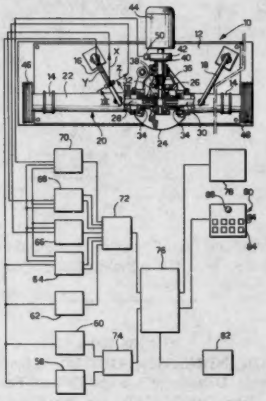
1. A quality control inspection process for a vehicle driving axle of the type comprising a differential unit with a driving gear and a cooperating driven gear which are mounted in respective bearings and are arranged to transmit drive to a differential gear of the unit, and two drive half-shafts driven from said differential gear, the inspection process comprising the steps of:

mechanically coupling the driving axle to be inspected to a support structure,

rotating the said driving gear of the differential unit,

applying a resisting torque to the ends of the drive-shafts remote from the differential unit,

obtaining at different values angular velocities for each direction of rotation of the said driving gear, electrical signals indicative of the acceleration transmitted from the



axle to the support structure in terms of the components of this acceleration taken along three mutually orthogonal directions,

processing the said electrical signals so as to obtain a series of comparison parameters,

comparing the values of the said parameters obtained with corresponding predetermined reference values, and

deriving from the said comparison an indication of any functional anomalies of the said driving and driven gears of the differential unit and/or of their respective bearings.

4,236,408

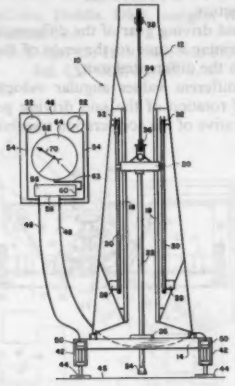
DRILLING RIG LOAD INDICATOR

Stuart E. Corry, Hallett, Okla., assignor to The Geolograph Company, Oklahoma City, Okla.

Filed Jun. 4, 1979, Ser. No. 45,393
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 **2 Claims**

1. A drilling rig load indicator of the type used on mobile drilling rigs which are provided with a drill string and drill bit to drill a bore into the earth, means for applying a downward force upon said string and bit, means for applying a lifting force to raise said string and bit, a plurality of hydraulic jacks which provide means to support and level said drilling rigs, and being further provided with a hydraulic pressure source which operates said jacks; said drilling rig load indicator being composed of a hydraulic totalizer, said totalizer having an input side in fluid communication by means of conduits with said hydraulic jacks and having an output side which represents the summation of the loads upon said jacks; and a pressure indicator, said pressure indicator being connected to said output side of said hydraulic totalizer and being adapted to visually display the summation of the loads upon said jacks; wherein said drilling rig load indicator is provided with a plurality of hydraulic pressure gauges, each of said pressure gauges being connected to said conduits and being adapted to visually display the load upon one of said jacks; and wherein said pressure indicator is provided with an adjustable rotating pointer and a dial face, said dial face being provided with two adjoining sectors, whereby, the point of adjoinment of said sectors represents a

"zero" position, and from said "zero" position to the end of one of said sectors represents the amount of said downward



force, and from said "zero" position to the end of the second of said sectors represents the amount of said lifting force.

4,236,409

DEVICE FOR INDICATING OPTIMUM SAIL POSITION

Roland Brachet, Domaine d'Arnaga, Callian, France (83810)

Filed Oct. 20, 1978, Ser. No. 952,979
Claims priority, application France, Dec. 7, 1977, 77 36802
Int. Cl.³ G01C *21/00*
U.S. Cl. 73—178 R **14 Claims**

1. An indicator for indicating the optimum angular position of a given sail for use on a vessel, said sail being adapted to be rotated in various positions relative to a wind, whereby the wind characteristics of said sail relative to the direction of said wind may be represented by a polar curve comprising a laminar zone, a disengagement zone, a transition zone, and a checking zone, said indicator comprising:

(a) display means for displaying the optimum angular position of said sail relative to said wind;

(b) evalution means for determining the position of said sail which corresponds to a value on said polar curve between the end of said laminar zone and the beginning of said checking zone as a function of the direction of said wind;

(c) indication means for indicating the direction of said wind to said evaluation means; and

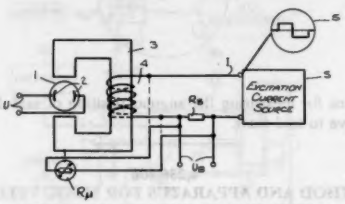
(d) driving means for driving said display means to display said optimum position whereby said driving means is adapted to drive said display means so as to display twice the value indicated by said evaluation means.

4,236,410

TEMPERATURE-COMPENSATED ELECTROMAGNETIC FLOWMETER

Eggert Appel, Dransfeld; Gottfried Geisler, Göttingen; Wilfried Kiene, Hann Munden, and Peter Nissen, Rosdorf, all of Fed. Rep. of Germany, assignors to Fischer & Porter Co., Warminster, Pa.

Filed Nov. 2, 1978, Ser. No. 956,896
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1977, 2756873
Int. Cl.³ G01F *1/60*
U.S. Cl. 73—861.12 **2 Claims**



1. A temperature-compensated electromagnetic flowmeter comprising:

A. a flow tube through which the fluid to be metered is conducted;

B. a pair of diametrically-opposed electrodes mounted on said tube;

C. an electromagnet establishing a magnetic field in said tube to be intercepted by the fluid passing therethrough to induce a signal voltage in said electrodes, said electromagnet being constituted by a magnetizable core having a coil wound thereon to which is applied periodic direct-current pulses to cause an excitation current to flow through said coil, the permeability of said core being temperature-dependent whereby the signal voltage yielded by said electrodes which is dependent on the strength of said magnetic field and is a function of the flow rate of said fluid is subject to a temperature-dependent error; and

D. compensation means responsive to changes in the temperature in the core of the electromagnet to render said signal independent of said error to produce an output signal that accurately reflects said flow rate, said compensation means including a reference resistor connected in series with said coil to produce a reference voltage that varies in accordance with the intensity of said excitation current to effect correction of said signal voltage, and a temperature-dependent resistor in thermal contact with said core and in shunt relation with said reference resistor to modify said reference voltage to compensate for the effect of temperature on said core.

4,236,411

ELECTROMAGNETIC FLOWMETER

Broder Ketelsen, Settmarshausen, Fed. Rep. of Germany, assignor to Fischer & Porter Co., Warminster, Pa.

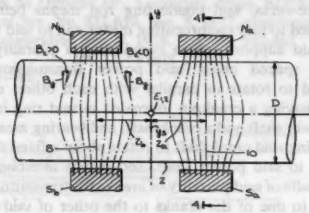
Filed Mar. 8, 1979, Ser. No. 18,832
Int. Cl.³ G01F *1/58*
U.S. Cl. 73—861.12 **6 Claims**

1. An electromagnetic flowmeter comprising:

A a flow tube having a pair of diametrically-opposed electrodes mounted thereon, and

B an electromagnet assembly for establishing a magnetic field in the tube which is intercepted by the fluid to be metered to induce a signal in said electrodes which depends on flow rate, X being the diametrical axis connecting the electrodes, Z being the longitudinal axis of the tube and Y being a transverse axis mutually perpendicular to axes X and Z, said assembly being constituted by two pairs of electromagnets, each pair being disposed at diametrical-

ly-opposed positions on the tube exterior to produce a magnetic field whose lines of flux are substantially parallel to the Y-axis, the two pairs being disposed on either side of a plane defined by the X and Y axes to create a combined



magnetic field having a magnetic flux component whose magnitude in said plane is relatively weak and increases as one moves in either direction along said Z-axis and then decreases, thereby defining a flux magnitude pattern having a saddle-shaped formation.

4,236,412

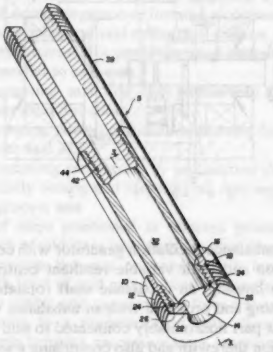
PRESSURE TRANSMITTING APPARATUS

Alma L. Myrick, P.O. Box 119, Texarkana, Ark. 75502

Filed Feb. 27, 1979, Ser. No. 15,793

Int. Cl.³ G01L *7/16*

U.S. Cl. 73—706 **3 Claims**



1. Apparatus for transferring pressure from a flow line having a first fluid therein to a standby line having one end in communication with said flow line, said standby line having a closed column of a second fluid and a pressure indicating means therein, said apparatus comprising a stainless steel piston mounted for limited axial movement in said standby line when subjected to pressure, said piston being disposed between said flow line and said indicating means, said standby line comprising a sleeve having said piston mounted therein, and means for limiting the axial movement of said piston in said sleeve to a short distance, said limiting means comprising inwardly extending shoulders adjacent the ends of said sleeve, the diameter of said piston being slightly less than the inside diameter of said sleeve, the outer surface of said piston and the inner surface of said sleeve being smooth, substantially cylindrical and of substantially constant diameter, and said second fluid being disposed between said piston and said sleeve to serve as a lubricating and sealing means therebetween, whereby pressure in said flow line is transferred to said piston to effect limited movement thereof and to subject said second fluid and said fluid indicating means to said pressure.

4,236,413

TESTING APPARATUS FOR TABLET-SHAPED SPECIMENS

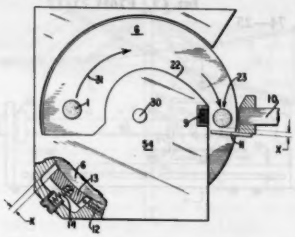
Jürgen Schmid, Köngen, and Winfried Eggert, Oberstadion, both of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,440

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1978, 7808575[U]

Int. Cl.³ G01N *3/08*

U.S. Cl. 73—821 **2 Claims**



1. An apparatus for the combined measurement of the thickness and the compression strength of tablet-shaped specimens comprising a conveyor including a rotatable disc, feeding means for orienting said specimens on said conveyor, a specimen measuring station located on said conveyor downstream from said feeding means and equipped with means for thickness and compression strength measurement, said station including cleaning means for removing and cleaning from said station substantially all remnants of specimens from the compression strength measurement means, said measurement and cleaning means being serially activated, said measuring station further including a stop member adapted to stop said specimen on said conveyor at said station, and said conveyor also including a resiliently mounted brake adapted to stop the conveyor when said specimen reaches said stop member and then remove the conveyor backwards a small distance sufficient to clear said specimen from said stop member.

4,236,414

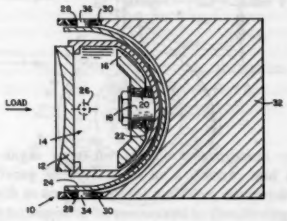
HIGH-G GIMBAL PLATFORM

Aubrey Rodgers, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 2, 1979, Ser. No. 41

Int. Cl.³ G01C *19/16, 19/26*

U.S. Cl. 74—5.1 **5 Claims**



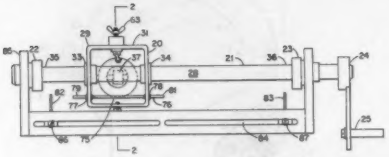
1. A platform assembly disposed for surviving a high-g launch phase comprising:

(a) a platform;

(b) a pair of gimbal members carried in gimballed relation with said platform, said gimbal members being in concentric gimballed relation therebetween;

(c) complaint support means for support of said pair of gimbal members;
(d) a rotor carried supported in one of said gimbal members; and,
(e) complaint restraining means disposed between said rotor and said one gimbal member.

4,236,415
TRAVERSE MECHANISM AND METHOD
George J. Musial, W. Boxford, Mass., assignor to Gear/tronics Corporation, North Billerica, Mass.
Filed Jun. 19, 1979, Ser. No. 49,957
Int. Cl.[3] F16H *25/12*
U.S. Cl. 74—25 12 Claims



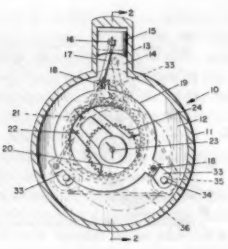
1. A traverse mechanism of the type including a carriage mounted to move longitudinally back and forth relative to an elongated rotating shaft a swivel mounted on said carriage, said swivel including a yoke and a shank with the shank rotatable around its axis in, and spring biased in the carriage, a friction roll journalled in the yoke of the swivel in frictional contact with the rotating surface of the shaft and there being stops to limit the path of the carriage by skewing the roll at each opposite end of the path said mechanism being characterized by

the shank of said swivel extending in a plane normal to the longitudinal axis of said shaft and being non-concurrent with said longitudinal axis to position said swivel yoke and friction roll alongside said shaft

means, associated with said swivel yoke and shank, for enabling said roll to swing in an arc in a plane parallel to the longitudinal of said shaft and

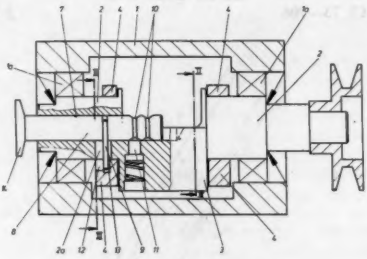
spring means in said carriage for resiliently urging said yoke and friction roll into frictional contact with the surface of said shaft.

4,236,416
POWER TRANSMISSION
Jose M. Barcita, 2809 Oakland Ave., Richmond, Va. 23228
Filed Sep. 28, 1978, Ser. No. 946,732
Int. Cl.[2] F16H *37/12*; G05G *1/00*
U.S. Cl. 74—52 6 Claims



1. A power transmission comprising a power shaft, means rotatably mounting said power shaft to rotate on a fixed axis, an eccentric secured on said power shaft to rotate therewith, a power transmission ring having a circular internal bearing surface bearing on said eccentric, said eccentric being rotatably mounted within said bearing surface, support means for confining said power transmission ring to non-rotative motion as said eccentric rotates within said power transmission ring, reciprocating means, connecting rod means interconnecting said power transmission ring and said reciprocating means for converting reciprocating motion of said reciprocating means to non-rotary planetary motion of said power transmission ring and vice-versa, said connecting rod means being pivotally connected to said reciprocating means and to said transmission ring, said support means comprising a plurality of cranks equally spaced about said power transmission ring and mounted to rotate in parallel with each other, each of said cranks having a crankpin journaled in said ring in parallel to said power shaft and a crankshaft, and bearing means rotatably supporting said crankshaft to rotate about a fixed axis which is parallel to said power shaft, and means interconnecting the crankshafts of said plurality of cranks for transmitting the force applied to one of the cranks to the other of said plurality of cranks.

4,236,417
UNBALANCE OSCILLATION GENERATOR
Franz Riedl, Munich, Fed. Rep. of Germany, assignor to Wacker Werke GmbH & Co. KG, Munich, Fed. Rep. of Germany
Filed Mar. 9, 1978, Ser. No. 885,011
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710349
Int. Cl.[3] F16H *33/10*
U.S. Cl. 74—87 6 Claims



1. As unbalance oscillation generator with constant direction of rotation and with variable resultant centrifugal force, includes: a housing, an unbalance shaft rotatably journalled in said housing and provided with an unbalance weight comprising a first part nonrotatably connected to said unbalance shaft for rotation therewith and also comprising a second part rotatably arranged on said unbalance shaft and movable into and arrestable in at least two angularly spaced positions relative to each other while the resultant of the two unbalance forces generated by the two parts varies in said at least two angularly spaced positions, a control pin projecting from said unbalance shaft in radial direction, an adjusting rod extending through a section of said unbalance shaft in the longitudinal direction thereof and having said control pin connected thereto, said adjusting rod being movable selectively into a first position corresponding to one of said angularly spaced positions of said second part of positively coupling said unbalance shaft to said second part by means of said pin to obtain a maximum centrifugal force and also being movable into a second position corresponding to the other one of said angularly spaced positions of said second part to disengage said positive coupling and in cooperation with said first and second part to obtain a centrifugal force less than said maximum centrifugal force, said second part having a circumferential groove and a recess communicating with said groove but offset relative to the latter in the longitudinal direction of said unbalance shaft, said recess being engaged by said control pin in a first position of said adjusting

rod, and said groove being engaged in a second position of said adjusting rod.

4,236,418

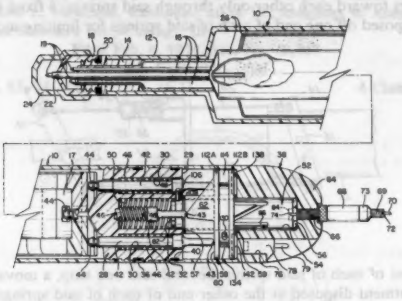
MULTI-ELEMENT WRITING INSTRUMENT

Victor Lum, 54 Outlook Dr., Lexington, Mass. 02173

Division of Ser. No. 831,610, Sep. 8, 1977, abandoned. This application Sep. 8, 1978, Ser. No. 940,467

Int. Cl.³ F16H *27/02*

U.S. Cl. 74—88 **4 Claims**



1. A motion conversion mechanism comprising:

first and second cams having a common axis and being nested with respect to each other in a manner permitting relative motion therebetween;

said first cam including a coaxially disposed cylindrical surface and a camming groove forming a continuous path around the periphery of said cylindrical surface, said path including excursions of a predetermined magnitude in a direction parallel to said axis;

means for mounting said first cam exclusively for linear motion in an axial direction;

means for mounting said second cam exclusively for angular motion about said axis;

at least one camming pin carried by said second cam;

means for radially biasing said camming pin into engagement with said groove; and

a plurality of steps positioned at selected points in said groove, each of said steps including a surface providing an abrupt transition between an upper depth level and a lower depth level of said groove, said step surfaces being oriented to inhibit said camming pin from traversing said steps opposite to a predetermined path direction, the groove depth between successive steps ramping up from said lower to said upper level in said predetermined path direction;

whereby an external force applied axially to said first cam causes said second cam to rotate in a predetermined angular direction, and an external torque applied to said second cam in said predetermined angular direction causes said first cam to move axially.

4,236,419

CLOTHES HOIST ELEVATING MEANS

Ronald J. Calvert, Edwardstown, Australia, assignor to Hills Industries Limited, Edwardstown, Australia

Filed Dec. 12, 1977, Ser. No. 859,588

Claims priority, application Australia, Dec. 15, 1976, PC8497

Int. Cl.³ F16H *27/02*

U.S. Cl. 74—89.15 **8 Claims**

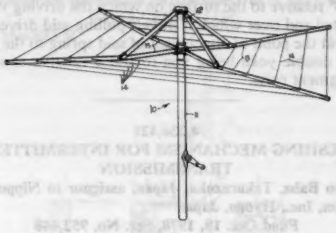
1. Elevating means for raising the elevating standard of a clothes hoist having a fixed lower standard and an upper elevating standard, comprising:

an abutment block in the fixed lower standard, said abutment block having slot surfaces including a pair of diametrically opposite parallel surfaces defining a non-circular slot extending through it,

a toothed nut of smaller diameter than the lower standard, contained within the lower standard for rotation about the polar axis of the lower standard, and supported by the abutment block,

the lower standard being a continuous tubular member but having an aperture extending through the wall thereof, adjacent but above the toothed nut,

a cover secured to said wall over said aperture, a bearing in the cover, a driving shaft journalled for rotation in the



bearing about an axis at right angles to the polar axis of the lower standard, a handle on the outer end and a pinion on the inner end of the driving shaft, said pinion meshing with said toothed nut,

a worm extending through said abutment block, said worm having a pair of diametrically opposite parallel faces engaging said parallel surfaces of the abutment block slot so as to inhibit rotation of the worm, and means on the upper end of the worm supporting said upper elevating standard,

said worm being threadably engaged by said toothed nut such that rotation of said toothed nut causes raising of the worm and thereby raising of the upper elevating standard.

4,236,420

WIDE-ANGLE JOINT

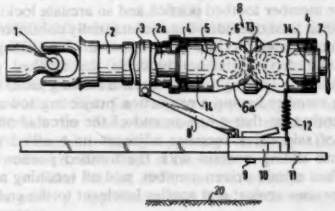
Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 837,012, Sep. 27, 1977, abandoned. This application Nov. 7, 1979, Ser. No. 91,954

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644671

Int. Cl.³ F16H *35/00*; F16D *3/18*

U.S. Cl. 74—380 **2 Claims**



1. A wide-angle joint for torque transmission couplings between a driving vehicle, such as a tractor, and a driven implement, such as an agricultural machine, comprising a first universal joint arranged to be connected to the driving vehicle, a second universal joint arranged to be connected to the driven implement, a double inner yoke interconnecting said first and second universal joints, said double yoke having first outer limbs associated with said first universal joint and second outer limbs associated with second universal joint, and a bearing for each of said first and second universal joints and for said limbs associated therewith, externally situated guide means compris-

ing two gear segment pairs disposed in meshed engagement for executing a joint rolling movement in a single tilting or swiveling plane, a first said gear segment pair supported on said first outer limbs and a second said gear segment pair supported on said second outer limbs, and attachment means for connecting the driving vehicle to the driven implement spaced laterally outwardly from said first and second vehicle joints, wherein the improvement comprises an elongated spring secured at one end to the exterior of said double yoke and extending laterally outwardly therefrom transversely of the axes of said first and second universal joints and attached at its opposite end to said attachment means for rotatably maintaining the tilting plane of said two gear segment pairs at an angle of more than 0° and less than 90° relative to the surface on which the driving vehicle is supported and over which it travels pulling said driven implement and the point of attachment of said spring to the exterior of said double yoke being non-rotatable relative to said two gear segment pairs.

4,236,421

MESHING MECHANISM FOR INTERMITTENT TRANSMISSION

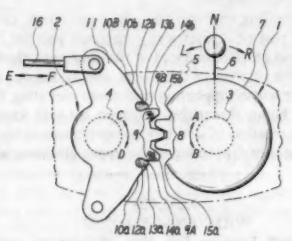
Masanao Baba, Takarazuka, Japan, assignor to Nippon Cable System, Inc., Hyogo, Japan

Filed Oct. 18, 1978, Ser. No. 952,448

Claims priority, application Japan, Apr. 8, 1978, 53-46474

Int. Cl.[2] F16H *57/04;* F16N *7/12*

U.S. Cl. 74—467 **3 Claims**



1. An intermittent transmission meshing mechanism prevented from depletion of lubricant comprising a toothed drive member rotatably mounted on a casing; a toothed driven member to be intermittently driven by the rotation of said drive member, said drive member having a toothed portion and a circular outer periphery continuous with the toothed portion, said driven member having a toothed portion meshable with said drive member toothed portion and an arcuate locking face formed on at least one side of and substantially continuous with said driven member toothed portion; and an oil retaining member on said driven member between the toothed portion thereof and the locking face or on the locking face, said oil retaining member having a projection projecting toward said drive member, so that when an end of the circular outer periphery of said drive member adjacent its toothed portion comes into sliding contact with the toothed portion or the locking face of said driven member, said oil retaining member slightly presses against and applies lubricant to the end.

4,236,422

FLUID PUMP CONTROL SYSTEM FOR A TRACTOR

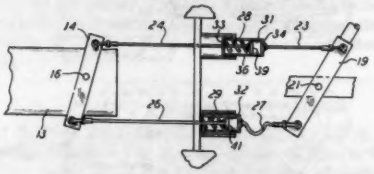
Gary L. Cochran; Charles D. Wilson, and Maurice Klee, all of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Continuation of Ser. No. 860,151, Dec. 14, 1977, abandoned. This application Aug. 1, 1979, Ser. No. 62,639

Int. Cl.[3] G05G *1/00*

U.S. Cl. 74—470 **5 Claims**

1. A fluid pump control for a tractor having a controlled fluid pump, comprising a pivotally mounted control member maneuverable by the operator, a force-responsive member pivotally mounted and operatively associable with said pump for setting said pump in variable selectable positions of operation including a neutral position, each of said members having two oppositely extending movable ends, two compression springs disposed intermediate said members to have one spring respectively intermediate each respective two of said movable ends, four connectors spearately operatively associated between respective ones of the four of said movable ends and respective ones of said springs at effective opposite ends of each of said springs for transmitting movement of said members toward each other only through said springs, a fixed stop disposed off one end of each of said springs for limiting move-



ment of each of said springs beyond said one stop, a movable abutment disposed at the other end of each of said springs to operatively relate with said springs and being freely movable relative to each other, said springs being disposed between said stop and abutment and being the only elements between said stop and abutment to yieldingly urge said abutment away from said stop, each said abutment being respectively connected with said connectors to have said springs apply force on said two connectors connected with said force-responsive member operatively associated with said pump and thereby position the latter said member in one of said variable selectable positions and later return to a pump neutral position after release of the control member.

4,236,423

OPERATION MECHANISM FOR TAPE RECORDER

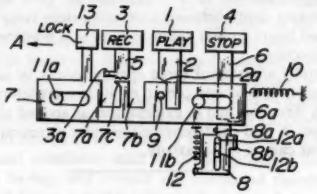
Toshihiro Nakao, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1978, Ser. No. 945,847

Claims priority, application Japan, Sep. 28, 1977, 52/130022[U]

Int. Cl.[3] G05G *1/02;* G11B *15/18;* G05G *5/08*

U.S. Cl. 74—483 PB **3 Claims**



1. An operation mechanism for a tape recorder comprising a recording operation member for placing the tape recorder in a recording operational state, a reproducing operation member in the region of said recording operation member for placing the tape recorder in a reproducing operational state, a stop operation member for releasing the tape recorder from the operational states effected by said recording and said reproducing operation members, each of said recording, said reproducing and said stop operation members being movable in a certain direction, and an engaging member which is movable in a direction transverse to said certain direction for engaging

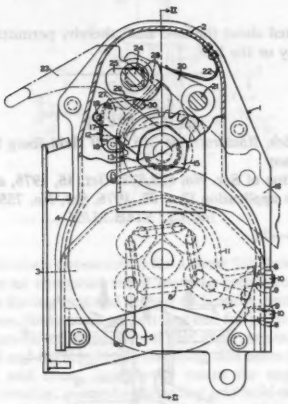
said recording operation member to prevent said recording operation member from being operated when said reproducing operation member is operated and said engaging member is in a lock position, and for allowing said recording operation member to be operated when said reproducing operation member is operated and said engaging member is in either one of a recording position and a follow-up recording position.

4,236,424

HAND BRAKE FOR RAILWAY VEHICLES

Wajih Kanjo, Midlothian; Richard J. Housman, Dolton, and Scott L. Natschke, Kankakee, all of Ill., assignors to American Standard Inc., Chicago, Ill.

Filed Feb. 8, 1979, Ser. No. 10,447
Int. Cl.³ G05G *1/08*
U.S. Cl. 74—505 **4 Claims**



1. A ratchet operated hand brake device for railway vehicles equipped with brake rigging effective when subjected to tension for effecting a brake application, said hand brake device comprising:

(a) a casing conveniently mountable on the vehicle;

(b) a tension chain having one end anchored by a U-bolt secured to said casing by a pair of parallel legs, the other end of said chain being connectable to apparatus to which tension is to be applied such as the brake rigging, for example;

(c) a winding drum rotatable in said casing in one direction for winding the chain onto said drum and placing tension thereon, and being rotatable in an opposite direction for releasing said tension from said chain;

(d) ratchet means operably disposed in said casing and including a common ratchet wheel engageable by an operating pawl assembly and a holding pawl, said ratchet wheel having a pinion formed thereon and rotatable therewith in mesh with a gear formed on said drum;

(e) an operating handle carrying said operating pawl assembly at one end and effective, when rotated in one direction out of a normal inoperative position, for causing engagement of said operating pawl with said ratchet wheel and effecting rotation thereof and of said pinion in a corresponding direction for rotating said drum in its said one direction;

(f) said operating handle being returnable to its said normal position by rotation thereof in an opposite direction relative to its rotation in said one direction during which time said operating pawl ratchets relative to said ratchet wheel and said holding pawl engages the ratchet wheel for holding it against rotation; and

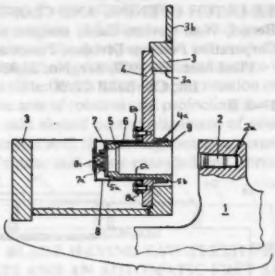
(g) a release handle including cam means engageable with both said holding pawl and said operating pawl, said cam means being effective, upon rotation of said release handle, for sequentially disengaging said operating pawl and said holding pawl, in the order named, from the ratchet wheel and consequently releasing tension from said chain.

4,236,425

BALANCING ARRANGEMENT FOR ROTATING MACHINERY

Hans Bellati, Wettingen, Switzerland, and Heinz Brünner, Waldshut, Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland

Filed Jul. 5, 1978, Ser. No. 921,908
Claims priority, application Switzerland, Jul. 8, 1977, 8469/77
Int. Cl.³ F16F *15/28*
U.S. Cl. 74—573 R **6 Claims**



1. A balancing arrangement for rotating machinery, comprising:

a rotatable member;

at least one balancing weight opening carried by the rotating member;

housing means for enclosing the rotating member having an interior pressure other than atmospheric pressure and having at least one opening to provide access both to the rotatable member and to at least one balance weight opening;

cover means for covering the at least one opening in the housing; and

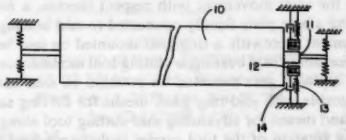
pressure lock means for permitting access to the at least one balancing weight opening while maintaining the interior pressure of the housing, the pressure lock means being carried by the cover means.

4,236,426

METHOD AND ARRANGEMENT FOR THE TRAVERSING OF THE CRITICAL ROTATIONAL SPEEDS OF ELONGATE ROTORS

Peter Meinke, Grossinzemoos, and Gernot Zippe, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to G K T Gesellschaft fur Keraverfahrenstechnik mbH, Jülich and M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 18, 1977, Ser. No. 816,800
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1976, 2632586
Int. Cl.³ F16F *15/22*; H02K *5/24*
U.S. Cl. 74—574 **32 Claims**



1. In a method for the traversing of the critical rotational

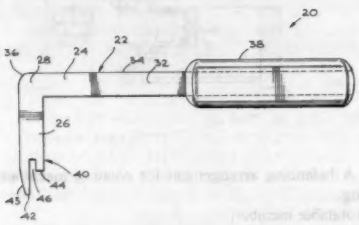
speeds of elongate rotors, the improvement comprising alternately coupling in and uncoupling to said rotor at least one critical frequency altering means positioned substantially at an end of the elongate rotor, which is held by at least one stationary support member and encompasses but does not contact nor influence the rotor during noncritical running speeds of the rotor, directly responsive to radial rotor movement and due to variation in the flexural axis of the rotor upon approach of the rotor speed to the critical rotational speeds thereof, said critical frequency altering means being coupled to said rotor at a critical rotational speed and producing a change in at least the frequencies of the critical rotational speeds, their amplitudes, or the critical rotational speeds and their amplitudes.

4,236,427

TOGGLE LATCH OPENING AND CLOSING TOOL

Larry H. Becnel, West Covina, Calif., assignor to General Dynamics Corporation Pomona Division, Pomona, Calif.

Filed Mar. 19, 1979, Ser. No. 21,520
Int. Cl.³ B25B *27/00*
U.S. Cl. 81—3 R **6 Claims**



1. An improved toggle latch opening and closing tool, said tool comprising, in combination:

a generally L-shaped shank comprising first and second diverging legs generally prependicularly joined together at one end of each of said legs, said second leg being rectangular in cross section; and

handle means attached to said first leg adjacent the free end of said leg, the free end of the second of said legs being extended along the shorter sides of said cross section and part of the longer sides of said cross section to form a bifurcation comprising spaced generally parallel inner and outer tines, the inner tine being relatively closer to said handle and shorter than the outer tine, adapted to releasably engage the edge of a toggle latch handle and to be slideably engaged in a toggle latch handle for opening and closing said latch.

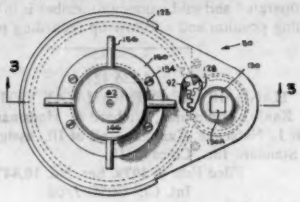
4,236,428

CANOPY CUTTING DEVICE

William C. Feamster, III, 4013 Nina Dr., Chesapeake, Va. 23321

Filed Mar. 7, 1978, Ser. No. 884,245
Int. Cl.³ B23B *3/24*
U.S. Cl. 82—4 R **3 Claims**

1. A cutting device for machining canopies and the like in constricted spaces, said device comprising a stub shaft mountable coaxially with respect to the canopy to be machined and having a threaded free end, a bearing mounted on said stub shaft for axial movement with respect thereto, a housing including a base plate fixedly connected to said bearing for axial movement therewith, a ring gear mounted on said bearing for rotation about said bearing, a cutting tool mounted on said ring gear, a pinion gear mounted for rotation on said housing and engageable with said ring gear, means for driving said pinion gear and means for advancing said cutting tool along said axis during rotation of the tool carrier including a feed nut rotatably mounted on said housing and threadably engageable with the threaded free end of said stub shaft to thereby advance the housing and the cutting tool as a unit along said axis as the feed



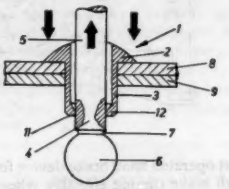
nut is rotated about the stub shaft thereby permitting removal of a canopy or the like.

4,236,429

BLIND RIVET

Gernot Dolch, Romerstrasse 216, 6900 Heidelberg 1, Fed. Rep. of Germany

Continuation of Ser. No. 622,578, Oct. 15, 1975, abandoned. This application Dec. 30, 1976, Ser. No. 755,664
Int. Cl.³ F16B *13/06*
U.S. Cl. 85—72 **5 Claims**



1. A blind rivet type fastening device comprising:

a thermo plastic hollow rivet and an integrally formed plastic setting mandrel made of the same material as the hollow rivet, said hollow rivet having an unbroken, continuous wall, hollow tubular cylindrical shank having a set head at one end of the tubular shank, said setting mandrel having a cylindrical draw shank telescopically received within said tubular rivet shank and being spaced from the tubular rivet shank by a cylindrical gap, and an enlarged mandrel head having a diameter larger than the internal diameter of the tubular rivet shank, said mandrel head extending axially beyond said tubular shank;

a first frangible break joint extending radially inwardly from the end of the tubular shank towards the draw shank, bridging said space by a bead portion which establishes a readially inwardly tapered end of a blind bore establishing said cylindrical gap, said first joint and bead portion being an integral connection between the tubular shank and the draw shank of the mandrel;

a second frangible break joint axially beyond said tubular shank and located between said draw shank and said mandrel head whereby axial force exerted on the mandrel draw shank to pull the mandrel head into the tubular shank will first break the first break joint by shear forces without imposing fracturing stress on the second break joint to permit axial movement of the mandrel and pull the mandrel head into the tubular shank to form the tubular shank into a closure head having outwardly bulging contour corresponding to the contour of the mandrel head whereby said bead portion being a thickened end of the shank grips around and hugs the mandrel head; and

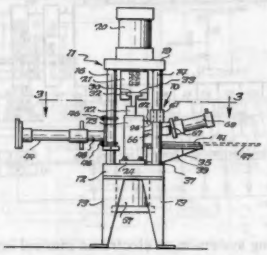
further axial force will break the second break joint to disconnect the draw shank from the mandrel head and permit withdrawal of the draw shank from the tubular rivet shank to leave the hollow tubular rivet shank unoccupied between its set head and said enlarged mandrel head.

4,236,430

SWING-AWAY HOLD-DOWN CONSTRUCTION FOR BAR OR BILLET SHEAR

James A. Hitt, Lakeview, N.Y., assignor to Buffalo Forge Company, Buffalo, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,034
Int. Cl.³ B23D *33/02*; B26D *7/02*
U.S. Cl. 83—461 **9 Claims**



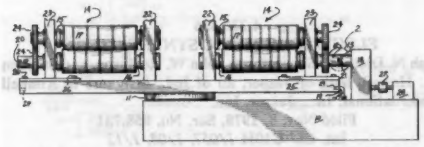
5. A hold-down construction for a shear for shearing workpieces from an elongated metal member comprising an elongated beam having first and second ends and a central portion therebetween, first means on said first end for pivotally mounting said beam on a first portion of said shear, second means on said second end for selectively fastening said beam to a second portion of said shear, hold-down means for engaging said elongated member, means for mounting said hold-down means on said central portion, whereby said elongated beam with said hold-down means thereon may be swung about said first portion when said second means is unfastened, said first portion of said shear comprising a first post on said shear, a first reduced size portion on said first post, a first bore on said first end of said elongated beam for receiving said first reduced size portion in mating relationship, said second portion of said shear comprising a second post on said shear, a second reduced size portion on said second post, said elongated beam including a block which is separable from the remainder thereof and coacts therewith to define a second bore at said second end for receiving said second reduced size portion in mating relationship, and fastening means for fastening said block to said remainder of said beam in clamping relationship with said second reduced size portion.

4,236,431

MULTIPLE HEAD SLITTER

Charles B. Gawlik, Chicago, Ill.; James D. Hall, South Bend, Ind., and Douglas S. Matsunaga, Vernon Hills, Ill., assignors to Braner Enterprises, Inc., Schiller Park, Ill.

Filed Jan. 18, 1979, Ser. No. 4,351
Int. Cl.³ B23D *19/06*; B26D *1/24*
U.S. Cl. 83—479 **4 Claims**



1. A multiple head slitter having a material pass line and including a frame, a plurality of slitter heads, each slitter head including a pair or arbors, means carried by said frame for supporting said slitter heads for rotation about a common vertical axis with the arbors of the slitter heads passing in a generally horizontal plane, each slitter head including an inboard bearing housing located adjacent said axis of rotation and an outboard bearing housing spaced generally radially relative to said axis from said inboard bearing housing with said pair of arbors thereof journaled between said housings, whereby a selected slitter head can be positioned with its pair of arbors extending across said material pass line, the improvement wherein said one arbor of the selected slitter head includes an extending end portion projecting outwardly from one of said outboard bearing housing and inboard bearing housing of the slitter head, driving means carried by said frame for rotating said one arbor when engaged with said extending end portion thereof, one of said arbor extending end portion and said driving means including a projecting part means for fitting in rotating locking engagement into said slotted part, said driving means being fixedly located relative to said axis of rotation of the slitter heads wherein upon rotation of the slitter heads about the axis of rotation said projecting part means will be fitted into said slotted part at alignment of said arbor extended end portion with the driving means to permit the driving means to rotate said arbor extended end portion and the arbor thereof.

4,236,432

FRET SAW BLADE HAVING SAW-TEETH PROVIDED WITH SETS AND AN AUTOMATIC FRET SAWING MACHINE HAVING THE FRET SAW BLADE

Hideo Kawakami; Masami Endo, both of Numazu, and Fumio Yamazaki, Fuji, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1978, Ser. No. 941,173
Claims priority, application Japan, Sep. 17, 1977, 52-111952
Int. Cl.³ B27B *19/10*
U.S. Cl. 83—848 **1 Claim**

1. In a fret saw blade used for a numerically controlled automatic fret sawing machine and adapted to cut wood material, said fret saw blade having a shank, saw-teeth having non deformed cutting edges and at least one saw-tooth having a cutting edge the center of which is deformed to form sets, the improvement in which the cutting edge of said deformed saw-tooth is constructed to have a V-shaped groove extending substantially the full width of the saw tooth in order to form narrow sharp ends at both ends of the V-shaped groove projecting substantially horizontally beyond the side surfaces of said shank, whereby said fret saw blade can cut a wood material along a predetermined profile by preventing the deviation of said saw blade caused by fiber orientation of the wood material from said profile.

4,236,433

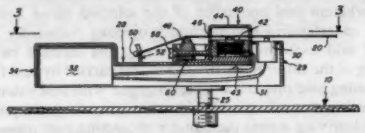
ELECTRIC STRING INSTRUMENT

Stephen Holland, 80 Madison Ave., Watertown, Mass. 02172

Filed Apr. 2, 1979, Ser. No. 25,784
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.16 **15 Claims**

1. A stringed musical instrument comprising;
a body having a neck,

a plurality of strings,
means mounting the strings to the body at the neck to thus support one end of each string,
a pickup means associated with a string for receiving a signal proportional to the vibration of the string,
amplifier means receiving said signal,
driver means also associated with the string and driven from said amplifier means for causing a sustaining vibration of the string,



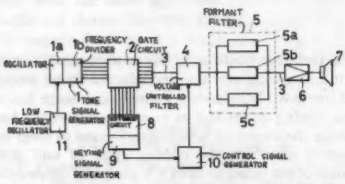
common support means for the pickup means, amplifier means and driver means and including means defining a anchor means for the opposite ends of the strings to maintain the strings in tension and means defining a bridge disposed spaced along the strings from the anchor means,
and means securing the common support means from the instrument body.

4,236,434

APPARATUS FOR PRODUCING A VOCAL SOUND SIGNAL IN AN ELECTRONIC MUSICAL INSTRUMENT

Koji Nishibe, Saitama, Japan, assignor to Kabushiki Kaisha Kawai Sakki Susakusho, Hamamatsu, Japan

Filed Apr. 19, 1979, Ser. No. 31,482
Claims priority, application Japan, Apr. 27, 1978, 53-4929553; Apr. 28, 1978, 53/5081553; Apr. 28, 1978, 53/5081653
Int. Cl.³ G10H *1/00, 1/12, 5/00*
U.S. Cl. 84—1.19 **9 Claims**



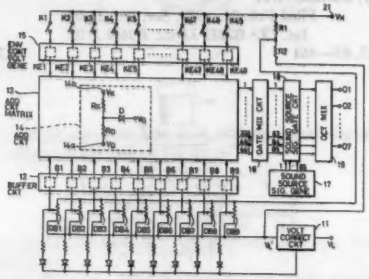
1. An electronic musical instrument for producing a vocal sound signal comprising musical tone signal generator means, a passing circuit connected to said musical tone signal generator means to pass a musical tone signal produced thereby, key means for selecting the musical tone signal to be fed from the musical tone signal generator means to said passing circuit, formant filter means connected in said passing circuit and including a plurality of filters connected in parallel to one another, and means coupled to said key means and to said formant filter means for producing in said passing circuit, after said formant filter means, two output signals in sequence, upon operation of said key means, one of said output signals being a vowel sound and the other of said output signals being a consonant sound whereby a vocal sound is obtained by the combination of the consonant and vowel sounds in sequence.

4,236,435

KEYING SYSTEM IN AN ELECTRONIC MUSICAL INSTRUMENT

Minoru Kakita, Hino, and Tsuneo Kosugi, Hachiohji, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed May 15, 1978, Ser. No. 906,347
Claims priority, application Japan, May 16, 1977, 52-56137
Int. Cl.³ G10H *1/06*
U.S. Cl. 84—1.22 **5 Claims**



1. A keying system in an electronic musical instrument having a keyboard with keys which respectively correspond to letter names, the system comprising: means for generating harmonic level control voltages for controlling the levels of harmonics, inclusive of the first harmonic; means corresponding to the keys of the keyboard of the musical instrument being responsive to manipulation of said keys for generating envelope control voltages, the number of envelope control voltages corresponding to the number of keys; means for generating a medium voltage of a value between the maximum value of said envelope control voltages and the minimum value of said harmonic level control voltages; addition means comprising circuits each of which adds an envelope control current and a harmonic level control current to produce an output current, wherein the envelope control current is proportional to the voltage difference between each of said envelope control voltages and said medium voltage, and the harmonic level control current is proportional to the voltage difference between each of said harmonic level control voltages and said medium voltage; mixing means for respectively mixing output currents from the addition means corresponding to depressed keys having the same letter names with one another from the output currents of said addition means to produce gate control voltages which are respectively proportional to the sums of said output currents corresponding to depressed keys having the same letter names; a sound-source circuit for generating sound-source signals of frequencies of harmonics, inclusive of the fundamental tone, corresponding to the keys; and means for respectively gating the sound-source signals of the frequencies of the letter names corresponding to said gate control voltages among the signals from said sound source circuit, through the use of the gate control voltages of said mixing means.

4,236,436

ELECTRONIC MUSIC SYNTHESIZER

Ralph N. Dietrich, Georgetown; John W. Robinson, and Stephen L. Howell, both of Jasper, all of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Nov. 8, 1978, Ser. No. 958,731
Int. Cl.³ G10H *1/057, 1/08, 1/12*
U.S. Cl. 84—1.26 **23 Claims**

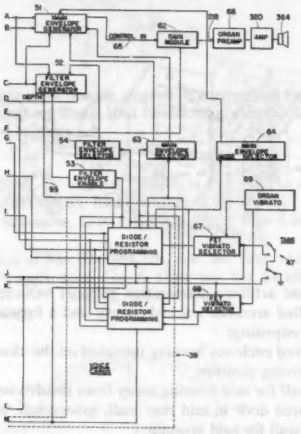
1. A music synthesizer comprising:
tone generator means for producing a plurality of tones,

keyboard controlled means for selecting one of said tones when a key of said keyboard is actuated,

footage generating means connected to said tone generator means for generating a plurality of tones octavely related to said selected tone,

a connector element having a plurality of output terminals and at least one input terminal, said footage generating means placing said tones generated thereby respectively on said connector element terminals,

a multiple element programmable electronic circuit module removably connected to said connector element and having a plurality of input terminals which contact the output



terminals of said connector element and an output terminal which contacts the input terminal of said connector element when said module is connected thereto,

a resistive circuit means on said module connected to the terminals of said module for resistively summing the octavely related tones to produce a composite tone having a particular wave shape on the output terminal of said module, and

programmable circuit means connected to said connector element input terminal for modifying said composite tone to produce a synthesized tone having predetermined static and dynamic frequency and amplitude characteristics.

4,236,437

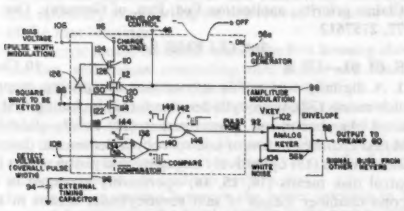
ORGAN BRASS PULSE KEYER

Stephen L. Howell; John W. Robinson, both of Jasper, Ind., and Donald Kube, San Jose, Calif., assignors to Kimball International, Inc., Jasper, Ind.

Filed Mar. 26, 1979, Ser. No. 23,699

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.26 **14 Claims**



1. In an electronic organ, a circuit for producing a pulse train having a time varying duty cycle comprising:

a source of keyer potential having an envelope with predetermined attack and decay characteristics,

a source of square wave tone signal,

a timing circuit including a capacitor and having a time constant,

electronic switch means connected to said timing circuit for charging and discharging said capacitor on respective alternate half cycles of said tone signal, said switch means including variable impedance means having a control terminal connected to said source of keying potential for varying the time constant of said timing circuit in accordance with said keying potential,

comparator means including a first input connected to said capacitor, a second input connected to a reference potential, and an output, said comparator means comparing the voltage on said capacitor with said reference potential and producing a triggering signal on said output whenever the voltage on said capacitor one of exceeds or falls below said reference potential, and

means connected to said comparator output and to said tone signal for gating said tone signal with said triggering signal to produce an output pulse train having a time varying duty cycle.

4,236,438

SEAL FOR HEADED PIN FASTENER MEMBER

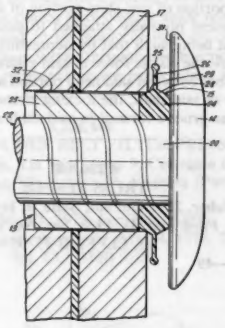
Hugh K. McGauran, Harlow, and Frederick A. Summerlin, Wheathampstead, both of England, assignors to Aerpat A.G., Weidstrasse, Switzerland

Filed Dec. 12, 1978, Ser. No. 968,736

Claims priority, application United Kingdom, Dec. 13, 1977, 51833/77; Jan. 25, 1978, 3010/78; May 18, 1978, 51833/78

Int. Cl.³ F16B *43/00*

U.S. Cl. 85—1 JP **2 Claims**



1. A resilient seal for sealing between the head end of a headed pin fastener member and an apertured workpiece in which the pin is to be installed, which seal comprises:

an outer annular part for sealing between the pin head and the workpiece around the aperture;

and an inner annular part for fitting around the pin adjacent to the head;

said inner annular part projecting beyond the thickness of the outer annular part in a direction perpendicular thereto and being tapered on the face thereof which is towards the outer annular part to provide wedging engagement between the pin and the aperture wall when the pin is inserted into the aperture so as to initially retain the pin in the aperture;

said inner annular part also projecting on both sides of the outer annular part and being tapered on said face at both sides of said outer annular part so that the seal is substantially symmetrical whereby the seal can be assembled on the pin either way round;

the seal further comprising a frangible weakened portion

connecting said outer annular part to said inner annular part, said weakened portion being imperforate and continuous and having a lesser thickness than the said outer annular part, whereby said frangible weakened portion, when the pin head is drawn towards the workpiece, breaks and thereby enables the outer annular part to remain around the aperture as aforesaid whilst the inner annular part enters completely within the aperture.

4,236,439

LOCKABLE PIN

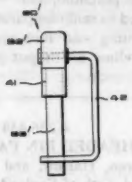
Kishio Imai, Itami, Japan, assignor to Sanyo Kiki Kabushiki Kaisha, Itami, Japan

Filed Aug. 11, 1978, Ser. No. 932,764

Claims priority, application Japan, Aug. 11, 1977, 52-96666; Aug. 11, 1977, 52-96667

Int. Cl.[2] F16B *19/00*

U.S. Cl. 85—5 CP **1 Claim**



1. A lockable pin comprising a pin body having a head portion fixedly connected to a stem portion at an upper portion thereof, said stem portion being insertable through a transverse bore formed in a shaft to be locked, an elastic member disposed around said stem portion and having one end thereof fixed to said upper portion of said stem portion of said pin body, and a locking element pivotally attached to said head portion, the arrangement being such that by depressing said pin body as a whole against the elastic force of said elastic member with said elastic member between said head portion and an outer peripheral surface of said shaft, the locking element is directly fitted in an annular groove formed in said shaft at its end.

4,236,440

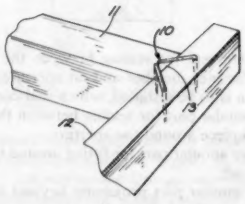
TRUSS STAPLE

Terry M. Haber, 2212 DuPont, Suite R, Irvine, Calif. 92715

Filed Aug. 31, 1978, Ser. No. 938,377

Int. Cl.[3] F16B *15/00*

U.S. Cl. 85—49 **2 Claims**



1. A truss staple comprising an integral metal wire formed into a general V-shape with the vertex of the V bent downwardly 90° to define a front punching element and the diverging arms of the V terminating in downturned ends defining spaced rear punching elements generally parallel to each other and to said front punching element, the end points of said front punching element and rear punching elements defining the vertices of a right isosceles triangle whereby first and second work members intersecting at right angles to define a joint can be fastened with said staple by forcing one of said punching elements into one member on one side of the joint and the remaining two punching elements in the other of said members on the other side of said joint so that said members are stabilized against lateral and swinging movements relative to each other at said joint.

4,236,441

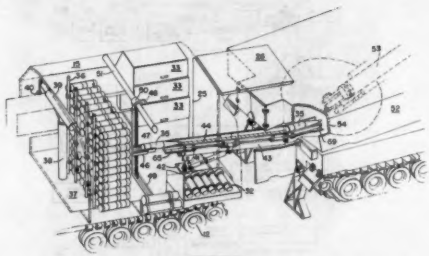
FIELD ARTILLERY AMMUNITION SUPPORT VEHICLE

John Turner; Richard A. Koster, and Seymour Bassman, all of York, Pa., assignors to Harsco Corporation, Harrisburg, Pa.

Filed Apr. 24, 1979, Ser. No. 32,908

Int. Cl.[3] F41H *7/02*

U.S. Cl. 89—40 F **10 Claims**



1. A field artillery ammunition support vehicle having a self-propelled armored tracked chassis and a forward driving position comprising:

an armored enclosed housing mounted on the chassis behind the driving position;

a rear wall for said housing away from the driving position;

an armored door in said rear wall, spaced side walls and a front wall for said housing;

compartments disposed within said housing along said side walls for receiving propellant charges;

door closing said compartments;

a plurality of adjacent cells disposed within and adjacent a side wall to adjacent the other side wall of said housing and spaced from said front wall for receiving at least one projectile in each of said cells;

an elevator movably mounted within said housing adjacent said cells for receiving at least one projectile from a selected one of said cells;

a horizontally disposed conveyor mounted within said housing and between said elevator and said door for moving projectiles from said elevator through said door;

reversible power means driving said elevator, and reversible power means driving said conveyor.

4,236,442

DIGITALLY COMPATIBLE SERVOMOTOR

Ludwig Botzler, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,739

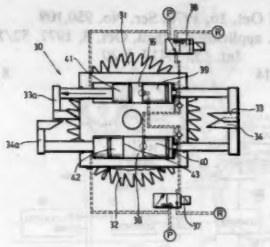
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757612

Int. Cl.[3] F15B *9/10*

U.S. Cl. 91—375 R **10 Claims**

1. A digitally compatible servomotor comprising, stepping motor means (**30**), servocylinder means (**12**) including first and second chamber means, piston means (**11**) axially slidable in said first chamber means of said servocylinder means, threaded spindle means (**13**) operatively engaging said piston means (**11**), control disk means (**14, 15, 16**) operatively arranged in said second chamber means of said servocylinder means in axial alignment with said threaded spindle means, one end of said threaded spindle means being rigidly connected to said control disk means, connector means (**24**) operatively connecting said

stepping motor means (30) to said control disk means, said stepping motor means comprising two oppositely toothed operatively interconnected ratchet wheel means, and hydraulically operable claw means operatively arranged for driving said ratchet wheel means and for locking said ratchet wheel means in a rest position.

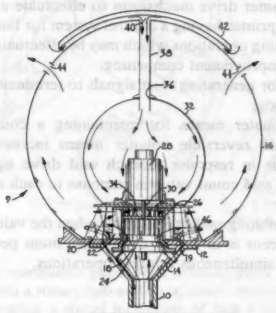


4,236,443

CHIMNEY STACK EXHAUST UNIT

George W. Schossow, 2316 Lilac La., White Bear Lake, Minn. 55110

Continuation of Ser. No. 894,726, Apr. 10, 1978, abandoned.
This application Aug. 6, 1979, Ser. No. 64,185
Int. Cl.[3] E04F *17/02*
U.S. Cl. 98—58 8 Claims



1. A chimney stack exhaust unit comprising:

(a) a first, generally closed, spherical housing having a top portion and a bottom portion, said housing including a first opening in said bottom portion adapted to fit over a chimney stack mouth, plurality of second, outlet openings spaced annularly about said top portion of the housing, and a third opening in said top portion;

(b) a squirrel cage fan mounted generally horizontally within the first housing above and adjacent to the first opening, whereby rotation of the fan draws exhaust air upwardly through the stack and forces said exhaust air outwardly and upwardly in a swirling motion around the inside walls of the first housing;

(c) an electric motor mounted within the first housing above the fan, and means connecting said motor and the fan whereby the fan may be driven by the motor;

(d) a second, generally closed housing having top and bottom portions mounted within the first housing and enclosing the motor, said second housing including a blower opening in said bottom portion directly above the fan, and an upper opening in said top portion; and

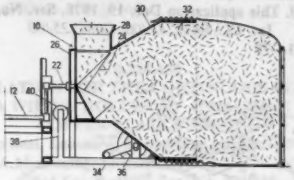
(e) a conduit extending between the upper opening in the second housing and the third opening in the first housing, whereby rotation of the fan draws air from outside the first housing into its third opening, downwardly through the conduit, into the second housing via its upper opening, and outwardly into the first housing via the lower opening in the second housing.

4,236,444

FORAGE PRESS

Leroy J. Seffrood, Rte. #1, South Wayne, Wis. 53587

Filed Apr. 16, 1979, Ser. No. 30,108
Int. Cl.[3] A01F *25/16;* B65G *3/04*
U.S. Cl. 100—65 10 Claims



1. A forage press for use in filling a collapsible forage receptacle comprising:

a tapered injection chamber adapted to be inserted into the forage receptacle;

a press chamber connected to the injection chamber;

a feed chute connected to the press chamber so that forage may be supplied therethrough to the press chamber;

a drive connection adapted to be connected to an external source of power; and

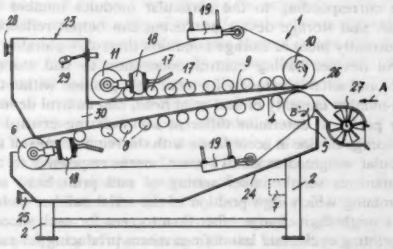
a press wheel located in the press chamber and connected to the drive connection so as to be driven thereby to rotate about an axis, the press wheel being of a generally circular shape and being divided into a plurality of sectors, each of the sectors being canted at an oblique angle relative to the rotational axis and to the plane of rotation of the press wheel so as to press forage through the injection chamber into the forage receptacle as the press wheel is rotated.

4,236,445

CONTINUOUS BELT FILTER PRESS

Raffaello Sernagiotto, Via Sant 'Anna 9, Casteggio (Pavia), and Emilio Sernagiotto, Via Bobbio 36, Voghera (Pavia), both of Italy

Filed May 3, 1979, Ser. No. 35,892
Claims priority, application Italy, May 4, 1978, 23012 A/78
Int. Cl.[3] B30B *9/24*
U.S. Cl. 100—118 7 Claims



1. A continuous filter press for treating general products, particularly grapes and dregs of pressed grapes, comprising: a vat for the collection of liquid; a pair of moving belts arranged in overlapping relationship, at least the lower belt of the pair of belts having openings for the percolation of the liquid and collection of the liquid in said vat; a loading hopper overhanging a portion of said lower belt; means for varying the angle of

convergence between said pair of belts; and side sealing means disposed along the edges of each of said belts, said sealing means being adjustable in height in order to follow the convergence between said pair of belts.

4,236,446

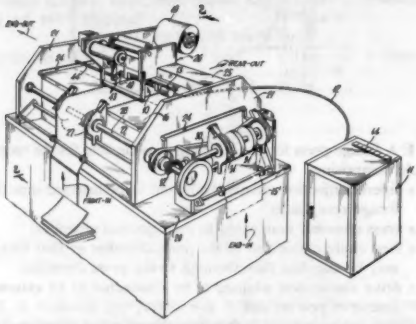
CHECK-DIGIT PRINTING MEANS

Vincent Lovrich, Waldwich, and George J. Sundell, River Edge, both of N.J., assignors to Autographic Business Forms, Inc., Mahwah, N.J.

Continuation-in-part of Ser. No. 879,595, Feb. 21, 1978, abandoned. This application Dec. 19, 1978, Ser. No. 971,107

Int. Cl.[3] B41L *45/00*; G08C *25/00*

U.S. Cl. 101—79 26 Claims



1. In a document printer with means for feeding successive documents to be successively serial-number printed in successive printing cycles, said printer including a sequentially indexible numerical print head and means synchronized with the printing cycle for numerically indexing said head in predetermined equal successive increments from one to the next printing cycle, the improvement which comprises indexible decimal check-digit print means carried by said printer and including means synchronized with said printing cycle for check-digit imprinting of each successive document in accordance with the indexed position of said check-digit print means, and further means synchronized with said printing cycle for changing the indexed position of said check-digit print means in accordance with each successive index increment required by a particular weighted-modulus system of computing check-digits, said further means including decimal-indexing drive means for said check-digit printing means, an indexible cyclic storage device having a number of discrete storage units per cycle corresponding to the particular modulus number involved, said storage device producing ann output reflecting the currently indexed storage condition thereof, a plurality of control devices having control connection to said storage device and settable uniquely for each digit position within the serial-number capacity of said print head, said control devices being preset to determine different unit-indexing control of said storage device in accordance with the requirements of the particular weighted-modulus system, means responsive to the instantaneous serial-number setting of said print head and determining which digit position of the serial number undergoes a single-digit change other than to zero for each successive printing cycle, said last-defined means producing for each printing cycle an output connection to that particular control device which is uniquely set for the particular digit position undergoing the single-digit change other tnan to zero, and a control connection from said storage device to said decimal-indexing drive means, whereby said check-digit printing means may be reset in synchronism with said printing cycle for check-digit printing in accordance with the currently indexed condition of said storage device.

4,236,447

PRINTING COLUMN NUMBER LIMITING DEVICE

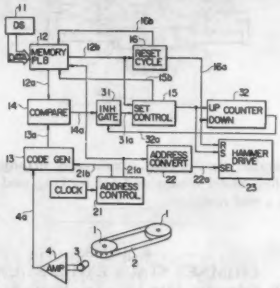
Kazuo Matsuzaki; Shigenobu Katagiri, and Hiroshige Nakano, all of Katsuta, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 950,109

Claims priority, application Japan, Oct. 8, 1977, 52/121239

Int. Cl.[3] B41J *1/20*

U.S. Cl. 101—93.14 8 Claims



1. In a printer having a type carrier, a data storage means having stored therein a printing data code, a sensor to determine the instantaneous position of type on said carrier and a comparator for comparing said printing data code with the instantaneous position of said type and generating a drive signal to a hammer drive mechanism to effectuate a printing operation, said printer having a control system for limiting the number of printing operations which may be effectuated at any one time, the improvement comprising:

reset means for generating reset signals to terminate a printing operation;

reversible counter means for maintaining a count value therein, said reversible counter means increasing said count value in response to each said drive signal and decreasing said count value in response to each said reset signal; and

means for inhibiting said drive signals when the value in said counter means is in excess of the maximum permissible number of simultaneous printing operations.

4,236,448

VIBRATION DAMPING MECHANISM IN A ROTARY PRINTING PRESS

Erich G. Wieland, Wurzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Jul. 13, 1979, Ser. No. 57,550

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2835960

Int. Cl.[3] B41F *5/00*; F16G *1/26*; B41F *13/00*

U.S. Cl. 101—216 7 Claims

1. A vibration damping assembly for damping vibration in a gear drive of a rotary printing press, the printing press having at least first and second rotating cylinders, each of the cylinders having a gear secured thereto, the gear carried by each cylinder being in engagement with the gear of an adjacent cylinder to form the gear drive of the printing press, to drive the cylinders at a first speed ratio, the vibration damping assembly comprising:

a first belt pulley secured to the first cylinder;

a second belt pulley secured to the second cylinder; and

a drive belt connecting said first and second belt pulleys, said first and second belt pulleys being of a size to have a speed

ratio less than the speed ratio of the corresponding cylinders.

4,236,449

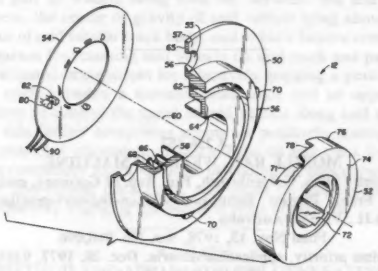
PASTER PILOT SENSOR FOR PRESS

Earl T. Price, San Jose, Calif., assignor to Earl T. Price, San Jose, Calif.

Filed May 29, 1979, Ser. No. 43,525

Int. Cl.³ B65H *19/16, 25/04, 25/10, 25/28*

U.S. Cl. 101—228 **3 Claims**



1. In a continuous paper feed printing press having a paper feeder with a rotary hub and a stationary mount, a pilot sensor for generating a signal indicative of hub rotation speed and position comprising:

an annular stator for mounting to said stationary mount about said hub, said stator including means defining an annular slot concentric with respect to a central axis through said stator, said slot-defining means comprising an inner ring and an outer ring, means defining a cavity in said inner ring at an outwardly disposed margin and said slot and having a first opening to said slot, and means defining a second cavity in said outer ring at an inwardly disposed margin of said slot and having a second opening to said slot such that said first opening opposes said second opening on a radius through said central axis;

a rotor including means for fixedly mounting said rotor to said hub, said rotor comprising an annular disk portion extending radially of a central axis and an annular lip portion adjoining said annular section, said lip portion extending parallel to said axis and concentrically about said axis, said lip portion being adapted to be placed within said stator slot at any relative rotational angle when said rotor is mounted to said hub and when said stator is affixed to said stationary mount for blocking said first opening from said second opening, said rotor further including means defining an aperture circumferentially in said lip portion of a predetermined circumferential extent and of a predetermined radial location relative to said predetermined hub angular position, said aperture being operative to unblock said first opening from said second opening for a predetermined angular displacement of said hub;

an optical radiation source disposed within one of said cavities for directing radiation from one of said openings to the other one of said openings; and

an optical radiation detector disposed in the other one of said cavities for receiving and sensing optical radiation from said optical radiation source whenever said aperture unblocks said first opening from said second opening for producing a signal indicative of rotational speed and rotational position of said hub.

4,236,450

INSTALLATION FOR THE CONTINUOUS CLEANING OF A WIPING ROLLER OF A MACHINE FOR COPPER-PLATE PRINTING

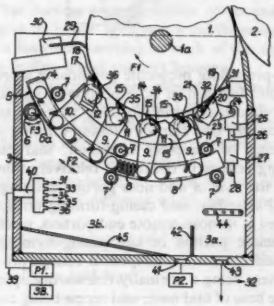
Antonio Bonomi, Lausanne, Switzerland, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Filed Sep. 9, 1977, Ser. No. 831,916

Claims priority, application Switzerland, Sep. 17, 1976, 11801/76

Int. Cl.³ B41F *35/00*

U.S. Cl. 101—425 **8 Claims**



1. In a printing apparatus having a rotatable wiping cylinder and a receptacle for cleaning fluid, the receptacle being arranged to receive a portion of the periphery of the wiping cylinder without the wiping cylinder dipping into cleaning fluid within the receptacle, a plurality of cleaning members in said receptacle arranged below the axis of the wiping cylinder spaced downstream in the direction of rotation of the wiping cylinder and disposed for engaging the periphery of the wiping cylinder, and a plurality of rows of nozzles disposed along each of said cleaning members upstream thereof in said direction of rotation for each continuously wetting the periphery of said wiping cylinder with cleaning fluid at each corresponding zone of contact of each corresponding cleaning member with said periphery of the wiping cylinder, means to supply cleaning fluid to said nozzles, a main cleaning scraper in said plurality of cleaning members disposed for engaging the periphery of the wiping cylinder upstream of said plurality of cleaning members relative the direction of rotation of the wiping cylinder, the main cleaning scraper subtending an acute angle with the periphery of the wiping cylinder located downstream of the main cleaning scraper in the direction of rotation of the wiping cylinder, the nozzles of a row of nozzles between the main cleaning scraper and a cleaning member of said plurality immediately downstream of said main cleaning scraper having orifices for directing cleaning fluid in the direction of the apex of said acute angle, and a row of nozzles upstream of said main cleaning scraper for directing cleaning fluid in the direction of said acute angle.

4,236,451

SELF-PROPELLING PROJECTILE FOR FIREARMS

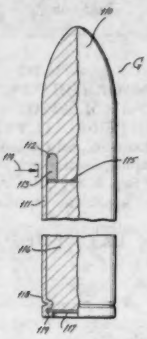
Giovanni Galluzzi, Lecco, Italy, assignor to Giulio Fiocchi, S.p.A., Lecco, Italy

Continuation of Ser. No. 816,915, Jul. 19, 1977, abandoned, and Ser. No. 626,352, Oct. 28, 1975, abandoned. This application Aug. 17, 1978, Ser. No. 934,606

Claims priority, application Italy, May 31, 1971, 25246 A/71; Nov. 30, 1971, 31868 A/71

Int. Cl.[2] F42b 5/02

U.S. Cl. 102—38 RA 3 Claims



1. A self-propelling projectile comprising a projectile body having a solid forward or nose portion of ogival form and a rearward cylindrical, casing-forming portion, said solid forward portion and said rearward casing-forming portion being integral, being of one-piece character, said casing-forming portion being hollow to define the relatively thin side wall of a chamber, the base of said nose portion defining the forward limit of said chamber, said casing-forming portion being normally opened at its nose-remote end portion, means for closing the nose-remote portion of said casing-forming portion for enclosing said chamber, a propellent charge provided in said chamber, there being a normally rearwardly opening, annular recess in the base of said nose, said recess being continuous and opening toward said chamber for normal communication therewith, the opposite or forward end of said recess being closed, the outer side of said annular recess constituting a continuous forward extension of said casing-forming portion side wall and being of substantially line thickness thereof whereby said recess is presented in the radially outward portion of said nose base, a priming mixture disposed in said recess, a disc disintegratable member extending transversely of said chamber in abutting relationship to the base of said nose portion and closing the normally open rearward end of said priming mixture-containing recess for confining said mixture therein, the portion of said nose inwardly of said recess being solid, whereby the relative location of the said recess and the relative thinness of said side wall presents the priming mixture for ignition by said percussion.

4,236,452

MOBILE APPARATUS FOR CONTINUOUSLY RENEWING TRACK

Josef Theurer, Vienna, and Manfred Brunninger, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Australia

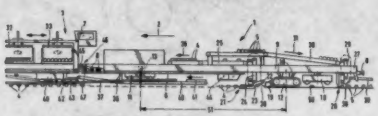
Filed May 8, 1979, Ser. No. 37,101

Claims priority, application Austria, Jun. 28, 1978, 4714/78

Int. Cl.[3] E01B 29/02, 27/11, 29/05

U.S. Cl. 104—2 7 Claims

1. A mobile apparatus for continuously replacing old rails and ties of an existing railroad track by new rail and ties, which comprises a train of cars mounted for mobility on the existing track and including cars for transporting the old and new ties, and a work car having a forward end and a rear end, the forward end of the work car being arranged adjacent a last one of the train cars and the work car carrying equipment adapted to work in a trackless section adjacent the track from which the rails and ties have been removed, the work car equipment including means for removing the old ties, means for laying the new ties, means for smoothing ballast between the tie removing and laying means, and guide means for raising and spreading apart the old rails, the work car being a semi-trailer and



including two selectively usable undercarriages for supporting the rear end of the work car, one of the undercarriages being an off-track track-laying bogie supporting the work car on the trackless track section and the other undercarriage being a vertically movable on-track bogie, and a selectively usable undercarriage for supporting the forward end of the work car, the forward undercarriage being a vertically movable on-track bogie, and means for selectively linking the forward end of the work car to the last train car or to the forward undercarriage for support of the forward work car end.

4,236,453

MOBILE RAIL WELDING MACHINE

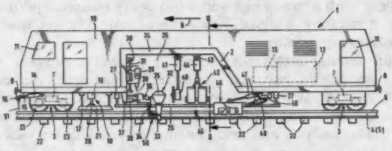
Heinrich Cöllen, Grevenbroich, Fed. Rep. of Germany, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Australia

Filed Nov. 13, 1978, Ser. No. 960,096

Claims priority, application Austria, Dec. 28, 1977, 9353/77

Int. Cl.[3] E01B 29/42, 31/18

U.S. Cl. 104—15 10 Claims



1. A mobile rail welding machine mounted on a track for mobility in an operating direction, the track being comprised of rails consisting of rail sections having abutting ends and ties supporting the rail sections, which comprises the combination of

(a) a heavy frame supported on the track rails for movement in the operating direction,

(b) a hydraulically driven flash butt welding device for welding the abutting rail section ends of a selected one of the rails mounted on the frame,

(c) a "Thermit" welding unit for welding the abutting rail section ends of a selected one of the rails mounted on the frame whereby the abutting rail section ends may be selectively flash butt welded or "Thermit" welded, and

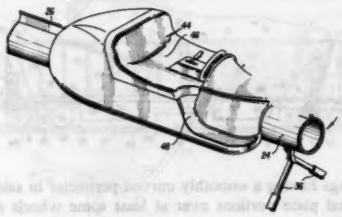
(d) a weld burr removal device adjustably mounted on the frame for selectively removing weld burrs at either one of the rails.

4,236,454

MOUNTAIN MONORAIL SLIDE

Alve J. Erickson, 17 Pleasant St., Milford, N.H. 03055, and Robert D. Thulman, 10596 E-1 Twin Rivers Rd., Columbia, Md. 21044

Filed Mar. 9, 1978, Ser. No. 884,963
Int. Cl.[3] A63G *21/04*
U.S. Cl. 104—69 11 Claims



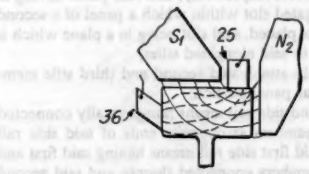
1. An amusement ride comprising a single continuous track having a tubular body with a circular cross section adapted to be disposed on nonlevel terrain to form a descending tortuous path; means for supporting said track in spaced relation to the underlying terrain; at least one gravity vehicle comprising a passenger-carrying space and having front and rear pairs of running wheels riding directly on said tubular track body; said front pair of wheels being toed out between one and four degrees; the center of gravity of said vehicle lying above the center of said tubular track body; said vehicle further comprising means for retaining said vehicle on said track and passenger-actuated brake means for selectively gripping a portion of said track between a movable brake shoe and an opposing member to control the speed of said vehicle along said track; said ride further comprising means for positively controlling the rotational orientation of said vehicle on said track including a continuous longitudinal rib extending radially outwardly from said tubular track body; and means on said vehicle for continuously engaging the opposite sides of said rib.

4,236,455

METHOD AND APPARATUS FOR GENERATING LINEAR ELECTROMAGNETIC TRAVELLING FIELDS FOR DRIVING AND INCREASING THE ADHESIVE LOAD OF RAILWAY MOTORED VEHICLES

Jose P. dos Santos, Av. Joao Crisostomo, 70, 40, Lisbon 1, Portugal

Continuation-in-part of Ser. No. 497,057, Aug. 13, 1974, abandoned. This application May 4, 1976, Ser. No. 683,230
Claims priority, application Portugal, Aug. 14, 1973, 60388
Int. Cl.[3] B61B *13/08*
U.S. Cl. 104—290 23 Claims



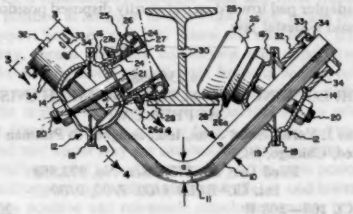
1. A method of improving the drive of a vehicle travelling on steel support and guide rails, said method comprising increasing the adhesive load of the vehicle on the rails, to correspondingly permit increase of the tractive and braking forces, by generating traveling magnetic fields in the rails by a system of linear inductors in elongated array along the rails and so arranged as to have lines of force which lie in planes perpendicular to the direction of travel of the magnetic field and pass transversely through the rails.

4,236,456

TROLLEY SUSPENSION

Kenneth D. Schreyer, Clarence; Earl T. Leverentz, N. Tonawanda, and Thomas R. Nusz, Amherst, all of N.Y., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.

Filed Nov. 13, 1978, Ser. No. 959,678
Int. Cl.[3] B61B *3/00*; E01B *25/22*; E05D *13/02*
U.S. Cl. 105—154 12 Claims



1. An overhead rolling trolley device adapted to ride upon upper planar trolley wheel tracking surfaces of opposite side flanges of a support beam;

said trolley device comprising a generally V-shaped load support bar having a cross-section of several sides and including at its lower apex end a saddle portion for suspending a load and carrying at each of the opposite legs thereof a trolley wheel support housing;

support beam engaging wheels mounted upon each of said housings at opposite sides of said support bar legs;

said support housings being fixed against rotation about said support bar legs having a mating configuration therewith to allow for longitudinally adjustable relation thereon to adapt said device to be adjustable to operate efficiently on tracking surfaces of different width and slope configurations; and

locking means inter-engaging said housings and said support bar legs to maintain said housings at prescribed positions longitudinally on said legs.

4,236,457

STEERABLE RAILWAY TRUCK ADAPTER PAD CENTERING MEANS

Geoffrey W. Cope, Williamsville, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 27, 1978, Ser. No. 964,030
Int. Cl.[3] B61F *5/30, 5/38*
U.S. Cl. 105—218 R 11 Claims

1. In a railway car truck side frame for a radially steerable railway car truck having means to mount a bolster in a center portion thereof, pedestal jaw on opposed end portions thereof for mounting wheel assemblies comprised of axles with wheels thereon, axle bearing assemblies bearing adapters securely attached to and mounted above said bearings, and resilient bearing adaptor pads mounted between said bearing adapters; an improvement in said side frame comprising:

an adapter pad centering means, including an adapter pad stop on said side frame at each pedestal jaw on the outermost sides of said pedestal jaw openings at the roof thereof wherein each of said adapter pad stops has an abutment extending transverse to said side frame, said abutments

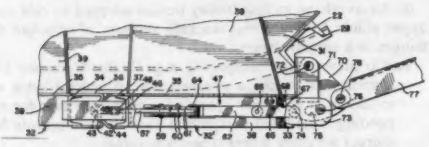
being in a spaced relation to the opposed side of the respective pedestal jaw such that when an adapter pad is positioned within the pedestal jaw an upper portion thereof is restrained from significant outward movement in the longitudinal direction of said side frame while a lower portion of said adapter pad is not restrained from this longitudinal movement thereby permitting temporary displacement in this outward direction of an associated bearing adapter axle bearing and axle by deformation of said truck without causing permanent displacement of said adapter pad toward an outwardly disposed position within said pedestal jaw.

4,236,458

DOOR LOCKING AND ACTUATING MECHANISM FOR HOPPER CAR

Eugene I. Varda, Saint John, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Dec. 26, 1978, Ser. No. 972,858
Int. Cl.[3] B61D *3/00, 7/00, 9/00*
U.S. Cl. 105—308 R **20 Claims**



1. A railway hopper car having an underframe,
a hopper structure supported on said underframe,
walls on said hopper structure defining at their lower ends a discharge opening,
a pair of doors pivotably connected to said hopper structure for outward movement from a closed position below said discharge opening to an open position, the improvement of a door actuating and locking arrangement comprising:
a pair of arms each pivotally connected to said car on opposite sides of said discharge opening,
each of said arms including a cam follower supported thereon,
a pair of actuating links each pivotally connected to one of said arms and to one of said doors,
each of said doors having inner longitudinal nose portions sealingly engaging each other in the closed position of said doors,
a locking mechanism including keeper means mounted on one end of one of said doors and overlapping an end of said other door,
a latch member slidingly mounted on said other door,
means biasing said latch member into locking engagement with said keeper means in the closed position of said doors, and
said latch member operatively connected with said actuating link whereby during engagement of said cam with an associated door opening mechanism, said arm and actuating link are pivoted outwardly and said latch member and keeper means are disengaged whereby said doors are moved to said open position.

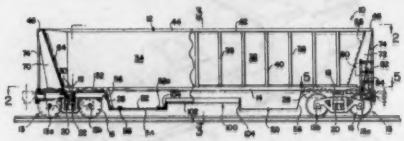
4,236,459

DEPRESSED CENTER CAR

Anthony Teoli, Pointe Claire, Canada, assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 699,312, Jun. 24, 1976, abandoned. This application Jun. 12, 1978, Ser. No. 914,509
Int. Cl.[3] B61D *17/00*
U.S. Cl. 105—406 R **9 Claims**

1. In an open top gondola railway car having a generally permanently closed bottom with horizontal plate portions and at least one depressed generally curved portion in cross-section, a plurality of drain holes in said curved portion and wheeled multi-axle trucks adjacent each end thereof, said horizontal plate portions of said bottom extending over wheels of said trucks and said curved portion of said bottom extending downwardly between said trucks, the improvement comprising:
an upwardly directed stepped portion intermediate the ends of said curved portion of said bottom, and



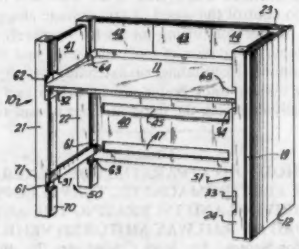
openings having a smoothly curved perimeter in said horizontal plate portions over at least some wheels of said trucks so as to provide an increase in the clearance distance between said wheels and said plate portions during location of said car over any severe convex or concave contoured portions of track.

4,236,460

FOLDABLE FURNITURE SYSTEM

Felice Poupko, 22 Earl St., Waterbury, Conn. 06710

Filed Nov. 9, 1978, Ser. No. 959,316
Int. Cl.[3] A47B *3/00*
U.S. Cl. 108—41 **7 Claims**



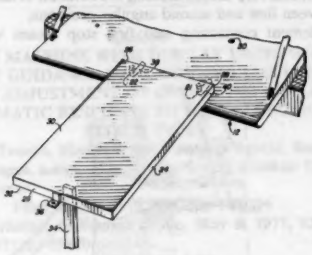
1. A multifunctional furniture unit comprising a frame and two side panel members, said frame comprising:
first, second, third and fourth elongated stile members which are parallel to each other;
a rear panel attached at its opposite sides to said second and third stile members respectively, said rear panel having at least one elongated slot within which a panel of a second furniture unit is placed, said slot being in a plane which is perpendicular to said elongated stiles;
means to pivotally attach said second and third stile members to said rear panel portion;
a first and a second side rail means non-pivotally connected to said stile members at opposite ends of said side rail means, with said first side rail means having said first and second stile members connected thereto and said second rail means having said second and third stile members connected thereto;
means to non-pivotally attach said first and second side rail means between respectively said first and second and said third and fourth stile members;
said unit also comprising a first and a second side panel member removably and pivotally connected to said frame at respectively said first and fourth stile members to provide functional surfaces.

4,236,461

REMOVABLE AND FOLDABLE VEHICLE TABLE

Lester T. Barksdale, P.O. Box 856, Lake Panasoffkee, Fla. 33538

Filed Mar. 7, 1979, Ser. No. 18,444
Int. Cl.[3] A47B 23/00
U.S. Cl. 108—44 8 Claims



1. A foldable and removable table for use with vehicles of the type having a hinged panel permitting entry into the vehicle, said table comprising:

a cornered table member having a flat supporting surface;

a pair of hooks, each hook adapted to removably engage said vehicle panel in a corresponding hole therein, each hook being coupled with said table member at spaced corners thereof;

means, including one of said hooks, for permitting rotation of said table about one of said corners;

a leg foldably fastened to said table member on a side opposite said supporting surface and foldable to a storage position flush with said side;

fastening means for holding said table member in a storage position parallel with said vehicle panel and with said opposite side adjacent said panel; wherein

rotation of said table member about said one corner and one of said hooks permits said table to be moved from a storage position flush with said panel to an open position for use as a table; and wherein

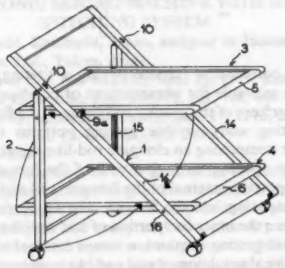
the other of said hooks is dimensioned so as to engage a third hole in said vehicle panel when said table member is rotated to said open position.

4,236,462

FOLDING TEA TROLLEY

Marc A. Berthier, 141 Bd. Saint-Michel, 75005 Paris, and Alain Y. Chauvel, 49 rue des Rigoles, 75020 Paris, both of France

Filed Aug. 16, 1978, Ser. No. 934,064
Claims priority, application France, Jul. 24, 1978, 78 22066
Int. Cl.[3] A47B 3/00
U.S. Cl. 108—111 4 Claims



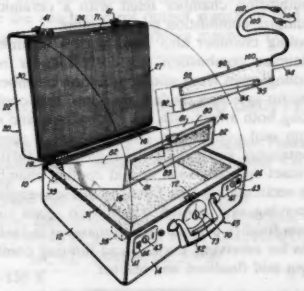
1. A folding trolley comprising a planar front frame of substantially rectangular shape and including a pair of side members, a planar rear frame substantially inverted U-shape and including a further pair of side members, said side members of said rear frame being pivotally connected at one end thereof to said side members of said front frame for movement between an open position in which said rear frame is at an angle to said front frame and a folded position in which said rear frame is parallel to said front frame adjacent one surface of said front frame, a lower tray, means pivotally connecting said lower tray to said front frame between said side members of said front frame for movement between a folded position in which said lower tray is substantially coplanar with said front frame and an open position at an angle to said front frame, means providing a support between said rear frame and said lower tray, an upper tray, means pivotally connecting said upper tray between the side members of said front frame in spaced relation to said lower tray for movement between a folded position in which the trolley is folded into three parallel planes wherein the front frame contains the lower tray in its plane and the rear frame and said upper tray are situated on opposite sides of and substantially parallel to said front frame and an open position in which said upper tray is substantially parallel to said lower tray in its open position and releasable attachment means between said upper tray and said rear frame for releasably holding said upper tray in its open position, said upper tray in said open position having a front portion projecting forwardly from the frames completely free of obstruction of the front portion, whereby access to the front portion of the upper tray is facilitated during use, further whereby said upper tray and said lower tray are rotatable in opposite directions between said open and said folded positions, and wherein said means providing support between said rear frame and said lower tray comprises a sliding connection between said rear frame and said lower tray and wherein said sliding connection comprises groove means formed in said rear frame and groove engaging means on said lower tray.

4,236,463

TAMPER PROOF CASE FOR THE PROTECTION OF SENSITIVE PAPERS

Randy L. Westcott, 6927D Roswell Rd., NW., Atlanta, Ga. 30328

Filed May 14, 1979, Ser. No. 38,916
Int. Cl.[3] E05G 3/00
U.S. Cl. 109—33 18 Claims



1. A case for the protection of secret documents comprising:

(a) a closure having opposed body portions defining an interior and an access opening for access into said interior, said closure being provided with a hole communicating with the interior and through which gases may readily escape when said closure is closed;

(b) a liner disposed within the interior of said closure, said liner having, itself, an open interior and an access opening communicating with said open interior, through which documents may be inserted and removed from said open interior, said open interior of said liner and said interior of said closure communicating so that gases from said inte-

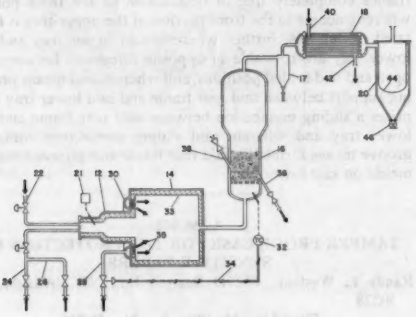
rior of said liner may pass through said interior of said closure and out of said hole;
(c) a pyrotechnic charge within said liner;
(d) switch means on said closure actuatable upon a change in the physical condition of said closure;
(e) igniter means in close proximity to said pyrotechnic charge and electrically connected to said switch means for igniting said pyrotechnic charge when said igniter means is actuated;
(f) a source of current carried by said closure and electrically connected to said switch means and to said igniter means for actuating said igniter means when said switch means is actuated; and
(g) control means for said switch means for rendering said switch means actuateable or nonactuatable.

4,236,464

INCINERATION OF NOXIOUS MATERIALS

Roger E. Anderson, Rancho Cordova, and Eugene M. Vander Wall, Citrus Heights, both of Calif., assignors to Aerojet-General Corporation, LaJolla, Calif.

Filed Mar. 6, 1978, Ser. No. 883,504
Int. Cl.³ F23G *7/04*
U.S. Cl. 110—238 **1 Claim**



1. A system for incineration of materials containing halogen or acidic gas constituents comprising:
a combustion chamber lined with a ceramic material to minimize combustion gas corrosion;
a cooling chamber also lined with a ceramic material to minimize combustion gas corrosion for receiving and cooling gases from said combustion chamber;
means for injecting coolant fluid into said cooling chamber along both a first path for mixing with and cooling gases from said combustion chamber, and a second path for containing said combustion gases to further minimize contact and corrosion of said cooling chamber;
a non-recirculating type fluidized bed scavenging reactor for receiving said cooled combustion gases such that said gases fluidize particulate bed material in said reactor; and
means for receiving, cooling and filtering combustion gases from said fluidized bed reactor.

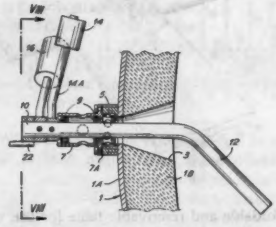
4,236,465

MATERIAL LEVEL CHECKING APPARATUS FOR USE IN A ROTARY INCINERATING FURNACE

Silvano Matteini, Via Bellosguardo 4A, Florence, Italy

Filed Jan. 16, 1979, Ser. No. 3,973
Int. Cl.³ F23G *5/06*
U.S. Cl. 110—246 **4 Claims**

1. A material level checking apparatus for mounting to the sidewall of a rotary refuse incinerating furnace comprising:
an element mounted for rotation through the sidewall of said furnace, said element rotating along an axis radial to the axis of rotation of said furnace;
an appendix disposed on said element and extending within the interior of said furnace;
weight means disposed on the other end of said element and external to said furnace, said weight means having a mass sufficient to cause said element and said appendix to rotate upon the rotation of said furnace;
first and second stop means disposed proximate to said element, said stop means limiting the rotation of said element between first and second angular positions;
said element contacting said first stop means when said



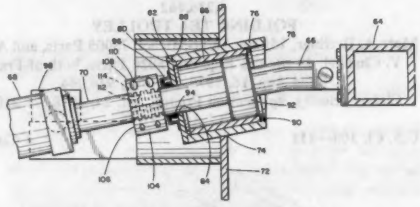
element is moved in a downward direction due to the rotation of said furnace;
said element rotating from said first stop means to said second stop means when said element is moved upwardly due to the rotation of said furnace and when said appendix is out of contact with said material in said furnace; and
said element being prevented from rotating from said first stop means to said second stop means upon being moved upwardly due to the rotation of said furnace when said appendix is in contact with said material in said furnace to thereby indicate the level of said material.

4,236,466

MECHANICAL ACTUATION OF FURNACE GRATE BEAMS

John C. Bergh, Elkhart, Ind., assignor to Wheelabrator-Frye Inc., Hampton, N.H.

Filed Jan. 2, 1979, Ser. No. 83
Int. Cl.³ F23H *7/08*
U.S. Cl. 110—281 **7 Claims**



1. In a combustion furnace having a grating, portions of which are movable for advancement of combustible material over the surfaces of the grating and through the furnace, means for actuating said movable grating portions in reciprocal movement comprising an elongate rod-like member extending through an opening through a wall of the furnace having an outer end portion external of the furnace wall and an inner end portion extending into the furnace, and an operative connection between the inner end portion of said rod-like member and the movable grating portions, a means external of the furnace for mechanical actuation of said rod-like member in reciprocal movement, and an operative connection between said actuating means and said rod-like member, a tubular member mounted to extend from beyond the furnace wall and through said opening in sealing relation with the furnace wall, said

tubular member having a passage extending therethrough of greater cross section than the cross section of the rod-like member, said tubular member being closed at the outer end portion except for an opening for passage of the rod-like member therethrough, and a piston plug rigid with said rod-like member slidably engaged within the tubular member during reciprocal movement to guide the rod-like member in reciprocal movement.

4,236,467

SEWING MACHINE WITH DISPLAY UNITS WHICH DISPLAY GUIDANCE DATA GUIDING THE USER IN MANUAL ADJUSTMENT OF OPERATING VARIABLES IN AUTOMATIC RESPONSE TO USER SELECTION OF STITCH TYPE

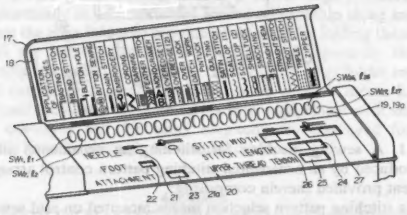
Yoshikazu Tanaka, Hachioji, and Yasukata Eguchi, Kunitachi, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed May 5, 1978, Ser. No. 903,176

Claims priority, application Japan, May 6, 1977, 52-51817; May 25, 1977, 52-59840

Int. Cl.[2] D05B *3/02*

U.S. Cl. 112—158 F **7 Claims**



1. A sewing machine comprising a machine housing, stitch forming instrumentalities provided in the machine housing for changing the relative positions of the needle and the sewn material to form stitches, stitch selector means operable by the user of the machine for indicating what type of stitches are to be produced by the stitch forming instrumentalities, manually operated adjusting means for adjusting operating variables of the sewing machine, display means operative upon receipt of control signals for effecting a visible display of guidance information informing the operator of what manual adjustments must be performed using the manually operated adjusting means, and control circuit means responding to the stitch selector means by applying to the display means control signals causing the display means to display guidance information pertaining to the selected type of stitches.

4,236,468

ELECTRONIC SEWING MACHINE WITH BACK STITCHING SYSTEM

Yasukata Eguchi, Kunitachi, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

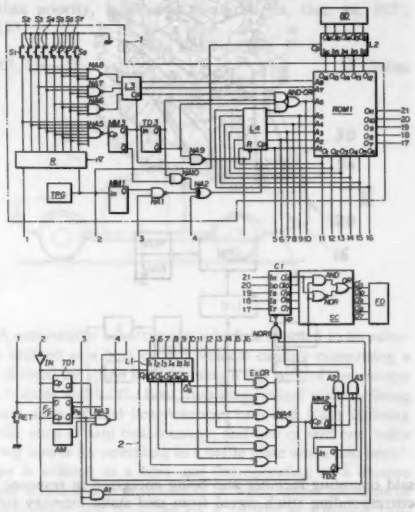
Continuation of Ser. No. 863,143, Dec. 21, 1977, abandoned. This application Jan. 2, 1979, Ser. No. 486

Claims priority, application Japan, Dec. 27, 1976, 51-156462

Int. Cl.[3] D05B *3/02, 27/00*

U.S. Cl. 112—158 E **4 Claims**

1. In a sewing machine, an arrangement for forming patterns made up of stitches, comprising, in combination a static memory (ROM1) having a plurality of outputs and a plurality of address signal inputs and comprised of a plurality of storage units connected to said inputs and outputs and addressable by address signals applied to the address signal inputs of the memory; stitch-forming means (BD), (FD) provided with a plurality of stitch control signal inputs connected to outputs of the memory and operative for producing any of a plurality of different stitches in dependence upon the signals produced at the outputs of the memory; addressing means (L4) operative when activated for applying to the address signal inputs of the memory next-address signals derived from the signals produced at the outputs of the memory; synchronizing means (TPG) operative for activating the addressing means in synchronism with the operation of the stitch-forming means; and back stitching means manually operated to change the next-address signals in accordance to the required back stitches, said



back stitching means including a manually operated switch (RET), a free running oscillator (AM) rendered effective by operation of said manually operated switch to activate said addressing means irrespectively of said stitch forming means, and comparator means (2) comparing said next-address signals produced before the manually operated switch is operated and those produced after the manually operated switch, so as to make effective the stitch control output signals of said static memory in relation to the stitch-forming means (FD).

4,236,469

SEWING MACHINE WITH FEED DOG DROPPING CONTROL SYSTEM

Hideaki Takenoya, Hachioji, and Hachiro Makabe, Fussa, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,685

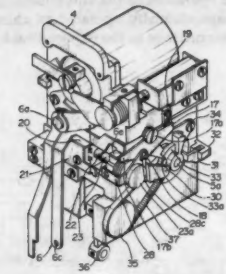
Claims priority, application Japan, Jan. 26, 1978, 53-8268[U]; Jul. 27, 1978, 53-102407[U]; Oct. 26, 1978, 53-131014[U]

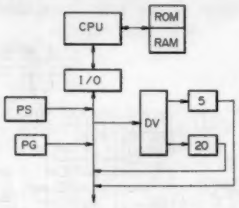
Int. Cl.[3] D05B *3/02, 27/00*

U.S. Cl. 112—158 E **7 Claims**

1. A sewing machine, comprising: stitch forming means for changing positions of the needle and the fabric to be sewn; electrically driven means for driving the needle and the feed dog; electronic control means including a static memory storing means for providing stitch control signals adapted for controlling said electrically driven means; pattern selecting means operated by reading out said stitch control signals from said static memory storing to drive said electrically driven means in accordance with a selected pattern; and feed control means for controlling the position of the feed dog including an operating member adapted for moving the feed dog between operative and inoperative positions, said electrically driven means including a pulse motor for controlling a horizontal

feeding amount of the feed dog and having an outwardly extending shaft, and a clutch solenoid operatively connected thereto, said clutch solenoid being operatively connected to





said operating member and being energized in response to a corresponding stitch signal from said static memory storing means.

4,236,470

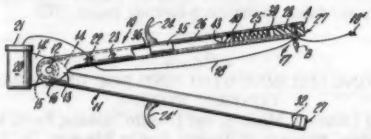
PORTABLE STITCHING DEVICE

Thomas K. Stenson, 140 Pelham Rd., New Rochelle, N.Y. 10805

Filed Jan. 17, 1979, Ser. No. 4,271

Int. Cl.³ B65H *54/62*

U.S. Cl. 112—169 **11 Claims**



1. A manually operable portable stitching device, comprising two arms projecting from a location of articulating connection of said arms at a given angle therebetween in an unsqueezed open position, a shuttle needle having a central eye for passage of filament and pointed at its longitudinal ends, said needle having first and second peripheral shoulders near but on opposite sides of said eye, said arms each having a needle-receiving opening adapted to accommodate one of the pointed ends of said needle, said needle-receiving openings being at corresponding locations in the respective projecting ends of said arms, the orientation of said openings being such that when one end of the needle is carried at one of said openings its other end is aligned for insertion into and reception in the other of said openings upon articulated movement of said arms into a contiguous relationship with each other in a squeezed closed position, said device further including releasable needle-retaining means at each opening for selective retention and release of the needle when a needle end is received in the opening, each of said arms including a latch means releasably biased by a spring means into engagement with the adjacent shoulder of a needle end, and each of said arms further including a selectively operable release mechanism for the latch of the involved arm, and manually operable actuating means associated with said release mechanisms and selectively operable in both said open and closed arm positions for moving said latch means away from said needle shoulder so that said needle end is released from said opening.

4,236,471

COLOR COOLED PRESSER FEET

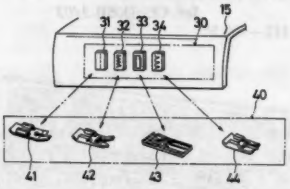
Toshiaki Okamato, Okazaki, and Hideo Nawa, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 6, 1979, Ser. No. 17,962

Claims priority, application Japan, Mar. 31, 1978, 53-43165[U]

Int. Cl.³ D05B *29/12*

U.S. Cl. 112—240 **5 Claims**



1. A sewing machine for stitching an ornamental stitch produced by an ornamental stitching pattern control arrangement provided therein comprising:

a stitching pattern selection means mounted on said sewing machine including a plurality of manipulating selection buttons classified in accordance with the color thereof; and

presser means including a plurality of presser foot members having color indications corresponding with the colors of said selection buttons for indication of stitching pattern according to color indication.

4,236,472

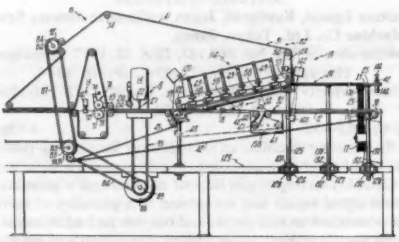
SEWING MACHINE MATERIAL PREASSEMBLY SYSTEM

John L. Rockerath, and Harold J. Schreck, both of Utica, N.Y., assignors to Cluett, Peabody & Co., Inc., New York, N.Y.

Division of Ser. No. 738,746, Nov. 3, 1976, Pat. No. 4,111,138, which is a division of Ser. No. 619,968, Oct. 6, 1975, Pat. No. 4,009,672. This application Mar. 6, 1978, Ser. No. 883,584

Int. Cl.² D05B *27/00*

U.S. Cl. 112—304 **5 Claims**



2. In a sewing maching system having a belt conveyor with longitudinally extending conveyor belts for conveying a material blank longitudinally forwardly through successive material

folding and sewing stations for successively prefolding and sewing the material blank respectively, and material folding and sewing apparatus at the folding and sewing stations for respectively prefolding the material blank and sewing the prefolded material blank as the material blank is conveyed longitudinally forwardly through the folding and sewing stations by the belt conveyor, the improvement wherein the material folding apparatus comprises an edge folding device for automatically prefolding an outer longitudinally extending lateral edge of a material blank as the material blank is conveyed longitudinally forwardly through the edge folding device, the edge folding device having a longitudinally extending base underlying and supporting at least one longitudinally extending conveyor belt and for supporting a lateral edge section of a material blank overlying said one conveyor belt as the blank is conveyed longitudinally forwardly through the edge folding device by the belt conveyor, a longitudinally forwardly extending and laterally inwardly tapering edge folder for folding the lateral edge of the material blank upwardly and laterally inwardly relative to the base as the material blank is conveyed longitudinally forwardly through the edge folding device, and at least two longitudinally spaced and longitudinally extending forwardly cantilevered guide members overlying the base and said one conveyor belt and with the forward guide member having a lateral edge extending longitudinally in predetermined spaced relationship along and within the edge folder to provide a fold edge for folding thereabout the lateral edge of the material blank upwardly and laterally inwardly relative to the base with the edge folder and each cantilevered guide member forming resilient means for resiliently retaining the material blank in engagement with said one conveyor belt for being longitudinally conveyed forwardly thereby through the folding device.

4,236,473

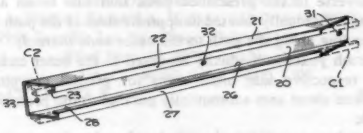
METHOD OF MAKING METAL BEAM FOR GEODESIC DOME STRUCTURE

Wesley D. Belt, 10553 Rountree Rd., Los Angeles, Calif. 90064

Filed Apr. 13, 1979, Ser. No. 29,643

Int. Cl.³ B21D *47/01*

U.S. Cl. 113—116 HA **3 Claims**



1. In the art of constructing a geodesic dome from flat triangular wall sections which are joined together at an exterior angle of more than 180 degrees, and where each wall section includes three beams incorporated within corresponding side edges thereof, the method of making one of said beams comprising the steps of:

selecting a generally rectangular sheet of metal;

bending the metal sheet along a parallel pair of longitudinal lines to provide a flat central base section and a pair of flat side walls which are parallel to each other but are not perpendicular to the base section, one of said side walls being inwardly inclined and the other being outwardly inclined;

curling the outer extremities of both of said side walls inwardly towards said base section;

cutting each end of the beam along a plane that is perpendicular to said side walls and at an acute angle to the plane of said base section so that the curled extremities of said side walls are shorter than said base section, and so that the ends of three similar beams can be butted together to form a triangle; and

forming a plurality of holes in said base section to facilitate fastening it in back-to-back relation to the base section of another similar beam that is incorporated within the side edge of an adjoining wall section.

4,236,474

BOATS

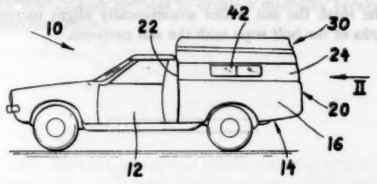
David P. Buirski, Cape Town, and Peter H. Hedley, Hermanus, both of South Africa, assignors to Cat-A-Van Associates, Baltimore, Md.

Filed Oct. 12, 1978, Ser. No. 950,800

Claims priority, application South Africa, Oct. 14, 1977, 77/6123

Int. Cl.³ B63B *1/00*

U.S. Cl. 114—56 **15 Claims**



1. A convertible boat/canopy which is adapted to be selectively utilized as a boat or as a vehicle canopy comprising a body defined by a first wall forming a top wall of the canopy and a bottom wall of the boat, two longitudinal walls defining opposite sides of said boat/canopy, two end walls defining opposite ends of said boat/canopy, and one of said end walls carrying means for operating as a baffle plate when said boat/canopy is utilized as a boat and for operating as a closure element which is also positionable between spacer elements of a vehicle when said boat/canopy is utilized as a vehicle canopy.

4,236,475

SAIL FEEDER

Carl A. Merry, Marion, Mass., assignor to Schaefer Marine, Inc., New Bedford, Mass.

Filed Aug. 2, 1979, Ser. No. 62,925

Int. Cl.³ B63H *9/08*

U.S. Cl. 114—90 **8 Claims**

1. In a sailboat mast provided with a slot for receiving the bolt rope incorporated into the luff edge of a sail, said slot having an enlarged entrance near the foot of the mast, the improvement comprising a sail feeder positioned below the slot entrance, said sail feeder including a rigid plate secured to the mast and a pair of short, generally cylindrical legs having corresponding first ends which are cut on a bias relative to the

leg axes, said corresponding leg first ends being positioned flush against said plate at laterally spaced locations thereon, said spacing being greater than the diameter of the sail bolt rope, said legs also being oriented so that they are upwardly angled relative to the plate and the mast and toed-in toward one another so that the legs are oriented at an angle of 35° to 65° relative to the plate and their corresponding second ends are spaced apart a distance less than the diameter of the sail bolt rope, said second leg ends being positioned at equal distances on opposite sides of the extended center line of the slot entrance, and means for rigidly securing said leg first ends to said plate so that when the luff edge of the sail is engaged in the sail feeder with the sail bolt rope slidably received between said plate and said legs, the sail bolt rope is aligned with the slot entrance so that, when the sail bolt rope is pulled along the slot in the mast, the sail feeder automatically aligns incremental lengths of the bolt rope with the slot entrance.

4,236,476

ARTICULATE MAST FOOTING ARRANGEMENT, IN PARTICULAR FOR WIND SURFBOARDS

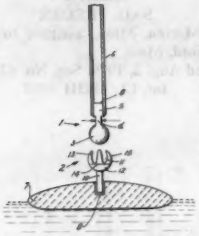
Alexander Solf, Westfalenweg 330, 5600 Wuppertal 1, Fed. Rep. of Germany, and Christian Mrozek, Karlsruhe, Fed. Rep. of Germany, assignors to Alexander Solf, Wuppertal, Fed. Rep. of Germany

Filed Dec. 23, 1977, Ser. No. 863,691

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658414; Oct. 13, 1977, 2746095; Dec. 13, 1977, 2755429

Int. Cl.[2] B63B *15/00*

U.S. Cl. 114—91 **3 Claims**



1. A connecting arrangement for connecting two elements with one another, particularly a mast and a boat body of a wind surfboard, comprising a male member connected with one of the elements and having a spherical section and a cylindrical bolt carrying said spherical section; a female member connected to another of the elements and having a cup portion which includes a shell section and a plurality of fingers extending from said shell section and receives and engages said spherical section of said male member only by snap action so that said spherical section of said male member is retained in but rotatable relative to said cup portion of said female member, at least one of said members connected with a respective one of the elements being rotatable within a horizontal plane; and means for rotatably connecting said one member with said respective one of said elements, including two grooves formed in said bolt of said male member and two resiliently yieldable rings engaged in said grooves and extending outwardly beyond an outer surface of said bolt.

4,236,477

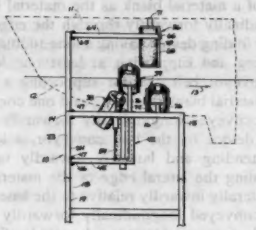
BOAT HULL CLEANING DEVICE

Thomas E. Norris, Spokane, Wash., and Bertie Spence, Moscow, Id., assignors to Water Front Products, Inc., Oakesdale, Wash.

Filed Jun. 4, 1979, Ser. No. 45,015

Int. Cl.[3] B63B *59/08*

U.S. Cl. 114—222 **13 Claims**



1. A device for cleaning the hull of a boat while moving the boat in a forward direction along a prescribed path through the device, comprising:

an open framework having opposed transverse ends joined by longitudinal sides;

a bottom brush arm pivotably mounted to one end of the framework and extending therefrom along the path to an outer end thereof, the bottom brush arm being pivoted about an axis transverse to and directly below the prescribed path;

a bottom brush yoke mounted to the outer end of the bottom brush arm for pivotal movement thereon about an axis substantially parallel to the prescribed path;

a bottom brush rotatably mounted to the bottom brush yoke for rotation thereon about a rotational axis transverse to the prescribed path;

a pair of elongated side brush arms each pivotably mounted to said one end of the framework about upright axes transverse to the prescribed path, said side brush arms being individually located at opposite sides of the path and extending along the path to the outer ends thereof;

side brush yokes individually mounted to the outer ends of the respective side brush arms for pivotal movement thereon about axes substantially parallel to the prescribed path;

side brushes mounted to the side brush yokes for rotational movement thereon about upright axes substantially transverse to the prescribed path; said side brushes being longitudinally spaced from said bottom brush;

a pair of intermediate brush arms each pivotably mounted at said one end of the framework and extending along the path between the bottom brush arm and each of said side brush arms to outer ends thereof longitudinally staggered with respect to the outer ends of the bottom and side brush arms, said intermediate brush arms being pivoted about axes substantially transverse to and situated below the prescribed path;

intermediate brush yokes mounted to the outer ends of the intermediate brush arms for pivotal movement about axes substantially parallel to the prescribed path;

intermediate brushes mounted to the intermediate brush yokes for rotation thereon about axes transverse to the prescribed path;

wherein the bottom, intermediate and side brushes overlap one another transversely across the prescribed path;

means for rotating the bottom, intermediate and side brushes about their respective rotational axes;

individual biasing means between the framework and each of the respective bottom, intermediate and side brush arms

for yieldably urging the individual arms toward the prescribed path; and

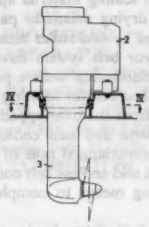
means for moving a boat in a forward direction along the prescribed path past the bottom, intermediate and side brushes.

4,236,478

DRIVE INSTALLATION IN BOATS

Staffan T. Mansson, Hjalteby, Sweden, assignor to Ab Volvo Penta, Gothenburg, Sweden

Filed Oct. 17, 1977, Ser. No. 842,960
Claims priority, application Sweden, Nov. 4, 1976, 7612301
Int. Cl.[3] B63H *1/14, 5/06*
U.S. Cl. 440—112 16 Claims



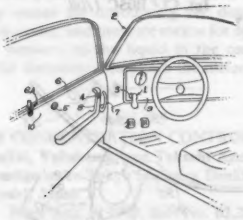
7. A bed member for mounting a drive leg through a hole in the bottom of a boat, comprising a generally horizontal annular upper panel portion having an inner edge and an outer edge, a continuous outer wall portion integral with said panel portion extending downwardly from said outer edge and a continuous inner wall portion integral with said panel portion extending downwardly and inclinedly inwardly from said inner edge to define first and second downwardly extending sections for receiving such leg therethrough, and a sharply inwardly tapering wall section joining the lower portion of said first section and the upper portion of said second section.

4,236,479

HEADLIGHTS REMINDER

Lila A. Walker; Richard A. Walker, and Craig A. Walker, all of 17966 Sencillo La., San Diego, Calif. 92128

Filed Mar. 19, 1979, Ser. No. 21,471
Int. Cl.[3] B60Q *9/00;* G01D *3/08*
U.S. Cl. 116—28 R 5 Claims



1. In a driver operated automotive vehicle having a manually operated control means for switching headlights on and off and a manually operated control means for opening the driver side exit door of said vehicle, a device for reminding the driver of the status of said means for switching when said driver attempts to operate said means for opening which comprises:

an attachment fastenable to the exposed surface of said means for switching said attachment being dimensioned and positioned so that said driver cannot actuate said means for switching without touching the attachment, and first means for fastening the attachment to said exposed surface comprising:

a first interlocking element bonded to one side of the attachment;

a second interlocking element cooperating with said first interlocking element to create a manually brekable interconnection, said second element being bonded to said exposed surface; and

second means for fastening the attachment to or near said means for opening positioned and dimensioned so that the driver cannot actuate said means for opening without touching the attachment, said second means comprising:

a third interlocking element of the same type as the second interlocking element, said third element being bonded to or near said means for opening and cooperating with said first interlocking element to create a manually breakable interconnection.

4,236,480

INDICATOR DIAL AND METHOD OF MAKING SAME

Friedrich Gröhl, Nierstein, Fed. Rep. of Germany, assignor to VDO Adolf Schindling A.G., Frankfurt am-Main, Fed. Rep. of Germany

Filed Dec. 8, 1978, Ser. No. 967,641
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1978, 2805159
Int. Cl.[3] G09F *9/307;* G01D *11/28*
U.S. Cl. 116—286 6 Claims

1. An indicator dial, comprising:

a transparent plate having a front side toward a viewer and a rear side facing away from a viewer with a coating of a first, opaque dye material covering the rear side and having at least one selected area free of the dye material;

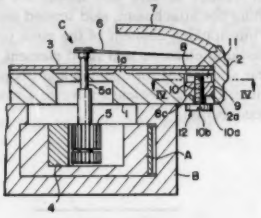
a second, translucent dye coat of a color contrasting with the first dye coat covering the selected area on the rear side, and defining at least one illuminable indication area for providing a visual indication of a physical function when the indication area is illuminated from the side of the plate facing away from the viewer;

scale symbols of a color contrasting with the first dye coat applied on the front side of the plate in the at least one illuminable indication area; partitioned lamp means at the rear side of the plate, positioned to direct light to the at least one illuminable indication area for illumination of the area; and an aperture in the dial for an indicator shaft.

4,236,481
MEASURING INSTRUMENT

Tadao Nakaya, and Takashi Kobashi, both of Utsunomiya, Japan, assignors to Kabushiki Kaisha Mitutoyo Seisakusho, Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,472
Claims priority, application Japan, May 22, 1978, 53-68887[U]
Int. Cl.³ G01B 5/02, 5/06, 5/08
U.S. Cl. 116—292 10 Claims

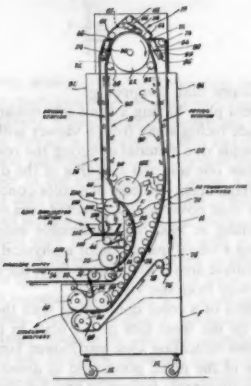


1. A measuring instrument comprising a tubular outer frame rotatably fitted around a circular inner frame, said outer frame having an inner peripheral face,
a pointer rotatably supported by said inner frame,
a scale plate attached to said outer frame for indicating the position of said pointer,
said inner frame having a rear surface facing away from said scale,
an elastic element having a portion thereof adjacent said inner peripheral face of said outer frame, and
manually manipulable screw means to compress said elastic element in the direction of the axis of said inner frame, for causing said elastic element to expand laterally into engagement with said inner peripheral face to restrict rotation of the outer frame with respect to the inner frame, said screw means having a manipulator exposed on the rear surface of said inner frame.

4,236,482
APPARATUS FOR APPLYING SEALING MATERIAL TO ENVELOPES

David L. Gingerich, San Bruno, Calif., and Robert Cohn, Omaha, Nebr., assignors to Champion International Corporation, Stamford, Conn.

Filed Jun. 9, 1978, Ser. No. 914,035
Int. Cl.³ B05B 5/00
U.S. Cl. 118—642 7 Claims

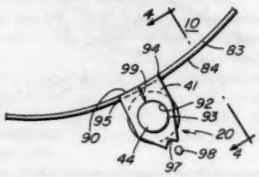


1. In an apparatus including roller means for applying sealing material to the facing closure flap and an adjacent body portion of an envelope, and means for drying said sealing material applied to said envelope, the improvement comprising:
means for conveying a series of said envelopes past said sealing material applicator means and said drying means, said conveying means having an envelope inlet and envelope exit and including
a main endless belt forming a lower support surface for said series of envelopes,
a first conveyor belt system having a run disposed in overlapping relation to a portion of a run of said endless belt for forming said inlet and receiving said series of envelopes therebetween, the overlapped runs of said endless belt and said first conveyor belt system passing between the nip of said sealing material application roller means and past said drying means to partially dry the sealing material applied by said roller means,
a second conveyor belt system having a run disposed in overlapping relationship with a portion of the opposite run of said endless belt for forming said exit and receiving therebetween from the overlapped runs of said first conveyor belt system and said endless belt partially dried envelopes, the overlapped runs of said second conveyor belt system and said endless belt conveying said envelopes past said drying means to completely dry said sealing material, and
a third conveyor belt system having a run disposed in overlapping relationship with a portion of said endless belt, and with each of said conveyor belt systems being guided through an endless run about a plurality of pulleys, with the axes of rotaton of said pulleys being in parallel relationship such that the runs are nontwisted, and with said third conveyor belt system being disposed between and in contacting relationship with said first and second conveyor belt systems, whereby said conveyor belt systems are positioned such that there is a substantially continuous coplanar overlap with said endless belt from said inlet to said exit of said apparatus, thereby providing for the secure conveyance of envelopes.

4,236,483
METERING ROLL WITH FIXED SLIDERS

Austin E. Davis; Raymond G. Cormier, both of Nashua; Leo O. Lutz, Hollis; Henry T. Pauk, and Harry E. Lones, both of Nashua, all of N.H., assignors to Nashua Corporation, Nashua, N.H.

Filed Jul. 9, 1979, Ser. No. 56,128
Int. Cl.³ B05C 1/08
U.S. Cl. 118—647 6 Claims



1. In a copying apparatus having
a rotating drum having a reusable photosensitive surface,
a developing station for contacting liquid toner to said drum surface to develop an electrostatic image, and
a transfer station for transferring said developed image to a transfer material,
apparatus for controlling the thickness of said liquid toner on said drum prior to said transfer station, comprising:
a metering roll,

means for biasing said metering roll toward said drum, and means for controlling the minimum distance from said drum photosensitive surface to said metering roll comprising:

a positionably fixable element fixed against rotation about an axis parallel to the axis of rotation of said rotating drum,

means for securing said element in an operative fixed position between said drum and said metering roll,

said element in said operative position having a first non-rotating surface against which said rotating drum surface can rotate in sliding frictional contact and a second non-rotating surface against which said metering roll can rotate in sliding, frictional contact, the distance between said first and second surfaces controlling the minimum distance between said roll and said drum photosensitive surface.

4,236,484

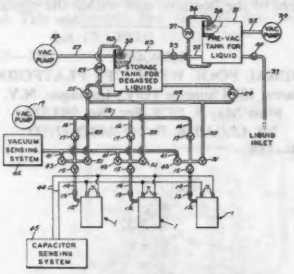
APPARATUS FOR PROCESSING AN ELECTRICAL APPARATUS

John Lapp, Franklin, Wis., and John R. Willy, Greenwood, S.C., assignors to McGraw-Edison Company, Elgin, Ill.

Division of Ser. No. 801,637, May 31, 1977, Pat. No. 4,187,327, which is a continuation of Ser. No. 612,028, Sep. 10, 1975, abandoned. This application Feb. 22, 1979, Ser. No. 14,226

Int. Cl.³ H01G *13/04*

U.S. Cl. 118—663 **6 Claims**



1. In an apparatus for processing an electrical apparatus having an outer casing containing a dielectric material and electrically conductive layers, comprising degassing means for degassing a dielectric liquid, vacuum means for evacuating the interior of the casing, vacuum sensing means for measuring the sub-atmospheric pressure developed by said vacuum means, liquid supply means for introducing the degassed dielectric liquid into the casing, and pressure means for applying a super-atmospheric pressure to the liquid in the casing to thereby impregnate the dielectric liquid into the dielectric material.

4,236,485

TONER CONCENTRATION CONTROL DEVICE

Sumitaka Inukai, Yokohama, and Takashi Azuma, Ebina, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 2, 1979, Ser. No. 63,264

Claims priority, application Japan, Aug. 2, 1978, 53-94332

Int. Cl.³ G03G *15/06, 15/09*

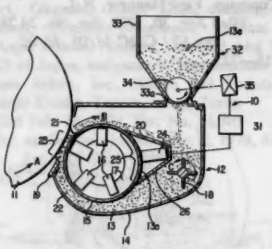
U.S. Cl. 118—690 **3 Claims**

1. A toner concentration control device comprising:

supplying means for supplying a fresh toner to a developing device for causing an electrostatic image on the surface of a photosensitive body to be developed with a developer comprising toner and carrier;

conveying means having a conveying surface for conveying the developer through a developing state;

detecting means for optically detecting an amount of the toner separated from the carrier of the developer and attached on the conveying surface to produce a corresponding signal; and



means for controlling the supplying amount of the toner to the developing device based on said corresponding signal.

4,236,486

TONER CONCENTRATION CONTROL DEVICE

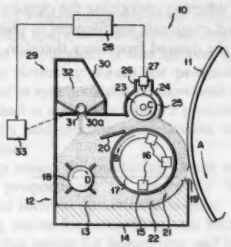
Chosin Nakamine, Yokohama, and Norihito Fuzii, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 20, 1979, Ser. No. 22,178

Claims priority, application Japan, Mar. 27, 1978, 53-39190[U]

Int. Cl.³ B05C *11/00*; G03G *15/00*

U.S. Cl. 118—691 **8 Claims**



1. A toner concentration control device comprising:

supplying means for supplying a fresh toner to a developing device for causing an electrostatic image on the surface of a photosensitive body to be developed by a magnetic brush of a developing agent comprising a toner and a carrier;

probe means adapted to be rotated in contact with the magnetic brush after development and having on the outer peripheral surface thereof an electroconductive nonmagnetic surface for picking up the toner from the magnetic brush, the electroconductive surface of said probe means having a plurality of parallel grooves provided in a direction of rotation of said probe to provide a toner pick up surface;

detecting means for optically detecting an amount of toner picked up on the toner pick up surface of said probe to produce a corresponding signal; and

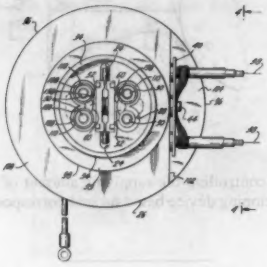
means for comparing the signal from said detecting means with a reference value and controlling an amount of fresh toner from said supplying means to maintain constant a toner concentration in the developing agent in said developing device.

4,236,487

CRYSTAL PLATING APPARATUS

Alan Kaplan, West Caldwell, N.J., assignor to Emkay Manufacturing Company, East Hanover, N.J.

Filed Apr. 30, 1979, Ser. No. 34,780
Int. Cl.³ C23C *13/08, 13/02*
U.S. Cl. 118—723 **14 Claims**



1. A crystal plating device comprising:
(a) a base having a power circuit and an oscillating circuit therein;
(b) a chamber formed in the base;
(c) a sealed top enclosing the chamber;
(d) at least one pair of filament posts affixed to the base disposed within the chamber and in the power circuit;
(e) a filament connected across the filament posts;
(f) a crystal holder removably connected with the base;
(g) a crystal in the oscillating circuit and carried by the crystal holder; and
(h) a pump connected to the base to vacuum pump the chamber whereby energizing the circuits will oscillate the crystal and evaporate the filament to plate the crystal and produce the desired frequency therefor.

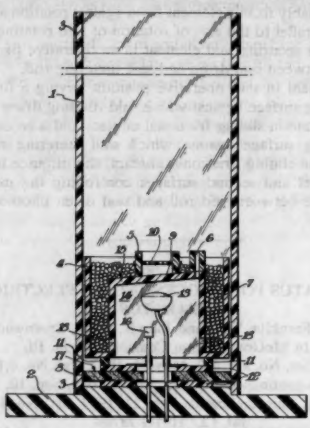
4,236,488

SEPARABLE MULTI-COMPONENT AQUARIUM FILTERING AND CLEANING DEVICE

Linda W. Olds, and Merton R. Olds, both of 14 Weldin Park La., Weldon Park, Wilmington, Del. 19803, assignors to Linda W. Olds; Merton R. Olds, both of Wilmington, Del. and John L. Williamson, Boling Brook, Ill.

Filed Aug. 23, 1978, Ser. No. 935,905
Int. Cl.³ A01K *64/00*
U.S. Cl. 119—5 **5 Claims**

1. An aquarium comprising a container having a bottom wall and a side wall extending upwardly, therefrom, a floatable unit inside the container normally at the bottom thereof having an exterior configuration that closely conforms to the interior configuration of the container, a pocket formed on the underside of the floatable unit, means providing a source of air in communication with the pocket, a portion of the floatable unit defining an opening capable of being plugged located near the top of the floatable unit and normally providing an exit for the air but when plugged allowing the air to collect in the pocket whereby the floatable unit rises to the top of the container, and a cleaning unit connected to the floatable unit for movement therewith, the cleaning unit including a cleaning element in



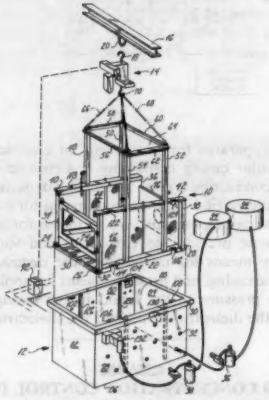
contact with the inside surface of the container side wall during movement of the floatable unit within the container.

4,236,489

ANIMAL POOL WITH LIFT PLATFORM

James A. Carra, 1590 Sunrise Hwy., Copiaque, N.Y. 11726

Filed May 5, 1978, Ser. No. 903,250
Int. Cl.³ A01K *29/00*; A61D *11/00*
U.S. Cl. 119—158 **1 Claim**



1. An animal pool comprising;
a substantially rectangular tank having an open top, first and second tank sidewalls and first and second tank end walls;
a substantially horizontal lift platform having frame members for the floor and vertical corner supports and adapted to be raised or lowered through said open top to enter and exit said tank;
said lift platform further comprising a floor, first and second sidewalls and first and second end doors;
each of said end doors of said lift platform being rotatable about a vertical axis from a closed to an open position;
hoist means extending upwardly from said lift platform to raise and lower said lift platform;
hoist supports for said hoist means;

an electrically controlled hoist mechanism for said hoist means;

chain means interconnecting said hoist mechanism and said lift platform;

horizontal hold means including inwardly projecting flanges and notches formed on said tank and said lift to cooperatively prevent relative horizontal movement of said lift platform, said notches receiving said projecting flanges to prevent said movement;

said flanges being located at the top of said tank and said notches being located on said lift platform;

bearing guide means for guiding said lift platform within said tank during vertical movement of said platform, said bearing guide means including vertical guide bars on the inside surface of said tank sidewalls and vertical supports of said platform cooperating therewith during vertical movement of said platform; and

liquid spray means for placing liquid and spraying liquid in said tank.

4,236,490

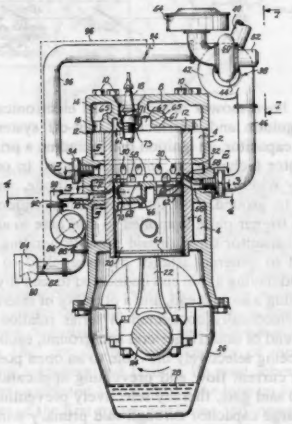
INTERNAL COMBUSTION ENGINE

Jerome B. Correll, New Orleans, La., assignor to A. C. Engines, Inc., Metairie, Ind.

Continuation-in-part of Ser. No. 596,417, Jul. 16, 1975, abandoned. This application Jan. 14, 1977, Ser. No. 759,441

Int. Cl.[2] F02B *19/10, 3/00*

U.S. Cl. 123—260 **30 Claims**



1. In a two stroke internal combustion engine having a cylinder with a piston reciprocally mounted therein, the improvement comprising:

said piston having portions defining a precombustion chamber for containing a precombustion mixture, said chamber having an ejection opening therein;

a spark plug, mounted in the engine so as to project in a first direction, completely through said opening and into the precombustion chamber when the piston is near top dead center position, to ignite said mixture at a position within said chamber; and,

a wall of said engine defining, along with the piston in said position, a combustion chamber in communication with the ejection opening and positioned with respect to the opening in a direction opposite to said first direction,

whereby flame ejected from the precombustion chamber through said opening is received in the combustion chamber.

4,236,491

IGNITION TIMING CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES

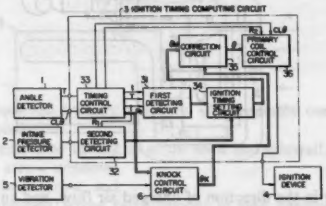
Tadashi Hattori, Okazaki; Kenji Goto, Susono; Daisaku Sawada, Susono; Takashi Shigematu, Susono; Hiroaki Yamaguchi, Anjo; Minoru Nishida, Okazaki, and Teruyoshi Ito, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya; Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, all of, Japan

Filed Feb. 28, 1979, Ser. No. 16,301

Claims priority, application Japan, Mar. 2, 1978, 53-24077

Int. Cl.[3] F02P *5/14, 3/08*

U.S. Cl. 123—425 **4 Claims**



1. An apparatus for controlling timing of ignition sparks supplied to an internal combustion engine having an output shaft rotated by the combustion of mixture comprising:

first position detecting means for producing a first position signal in synchronized relation with the arrival of said output shaft at a predetermined reference position;

computing means for computing an ignition spark angle relative to the timing of said first position signal in response to operating conditions of said internal combustion engine;

igniting means for supplying said internal combustion engine with an ignition spark in synchronized relation with the arrival of said output shaft at said ignition spark angle;

second position detecting means for producing a second position signal in synchronized relation with the arrival of said output shaft at a position where a pressure of combustion caused by said ignition spark attains substantially a maximum value;

knock detecting means for producing knock signals having magnitudes proportional to respective intensities of knocks of said internal combustion engine;

first integrating means for integrating said knock signals;

second integrating means for integrating said knock signals;

interval control means for limiting the operations of said first integrating means to respective first and second predetermined intervals which are present before and after said second position signal, respectively;

dividing means for dividing a second output of said second integrating means by a first output of said first integrating means; and

correcting means for correcting said ignition spark position in response to an output of said dividing means.

4,236,492

INTERNAL COMBUSTION ENGINE HAVING A SUPERCHARGER AND MEANS FOR COOLING CHARGED AIR

Paul Tholen, Im Lüh, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Dec. 5, 1977, Ser. No. 857,791

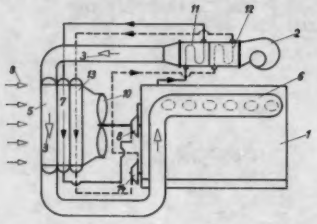
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1976, 2655017

Int. Cl.[3] F02B *29/04*

U.S. Cl. 123—119 CD **10 Claims**

1. An arrangement comprising in combination: an internal combustion engine; a supercharger for supplying charged air

to said internal combustion engine; at least two means for cooling said charged air having different temperature levels and being interposed between said supercharger and said internal combustion engine as well as communicating with same and being located in the charged air flow path, said means for cooling charged air comprising an air cooled supercharger intercooler and at least two liquid cooled supercharger intercoolers each having a different temperature level as well as being arranged ahead of said air cooled supercharger inter-



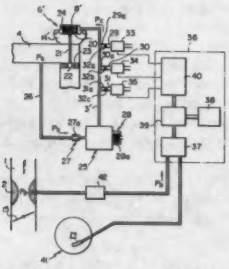
cooler in the direction of charged air flow, and an air cooled heat exchanger operatively connected to said liquid cooled intercoolers and located in the flow of said cooling air from siad air cooled supercharger intercooler; and means for drawing cooling air into said arrangement, said means for cooling charged air being arranged in succession in the stream of said charged air in such a way that the temperature of said charged air decreases in the direction of flow thereof, and the temperature of said cooling air increases in the direction of flow thereof.

4,236,493

EGR CONTROL SYSTEM

Ken Nakamura, Kawasaki; Yasuo Nakajima, Yokosuka; Hiromichi Ofuji, Yokohama, and Eiji Murata, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 30, 1979, Ser. No. 43,831
Claims priority, application Japan, Jun. 1, 1978, 53/66458
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **8 Claims**



1. An exhaust gas recirculation control system for an internal combustion engine, comprising:

an exhaust gas recirculation passage means for passing therethrough a portion of the exhaust gas issued from the internal combustion engine;

a source of vacuum;

an exhaust gas recirculation control valve including a control vacuum chamber communicating with said source of vacuum, said exhaust gas recirculation control valve being constructed and arranged such that it varies the degree of flow resistance in said exhaust gas recirculation passage means in response to a control vacuum within said control vacuum chamber;

a control passage means for providing communication between said source of vacuum and said control vacuum chamber;

said control passage means being formed with a plurality of holes which are spaced with each other in a longitudinal direction of said control passage means;

a valve system including a plurality of ON-OFF valves to open and close said holes, said valve system having 2^n different states, where: n denotes the number of said plurality of ON-OFF valves; and

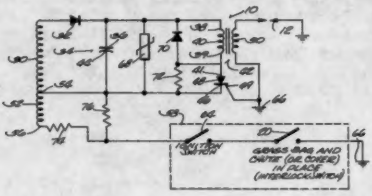
control means adapted to energize said plurality of ON-OFF valves selectively in accordance with operating conditions of the internal combustion engine.

4,236,494

ELECTRONICALLY CONTROLLED C.D. IGNITION AND INTERLOCKING SHUT-OFF SYSTEM

Harold W. Fairchild, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 21, 1978, Ser. No. 944,335
Int. Cl.³ F02P *1/00*
U.S. Cl. 123—630 **7 Claims**



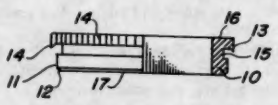
1. A lawn mower comprising an electronically controlled C.D. ignition and interlocking shut-off system including a charge capacitor, an ignition coil including a primary winding, a thyristor including an anode connected to one end of said primary winding, and including a cathode, and a gate connected to ground, said thyristor being rendered conductive when a trigger pulse is applied to said gate to allow discharge of said capacitor through said primary winding, a trigger coil adapted to generate trigger pulses applied to said thyristor gate, and having a first end connected to said thyristor cathode and having a second end, and a plurality of interlocking switch means electrically connected in series relation between said second end of said trigger coil and ground, each of said switch means being selectively movable to an open position for interrupting current flow and preventing application of a trigger pulse to said gate, thereby selectively preventing discharge of said charge capacitor through said primary winding.

4,236,495

SELF LOCKING VALVE SEAT INSERT

Jose Rosan, Jr., Newport Beach, Calif., assignor to Rosan, Inc., Newport Beach, Calif.

Filed Oct. 13, 1978, Ser. No. 950,973
Int. Cl.³ F01L *3/22*
U.S. Cl. 123—188 S **2 Claims**



1. A cylinder head and valve seat insert in combination comprising;

a cylinder head of material softer than the valve seat insert;

a valve seat insert for installation therein which includes a pilot flange, a locking flange means containing a cutting edge on its lower face and the valve seat means on its upper face, the circumference of said locking flange containing longitudinal serration means;

an annular groove formed below said locking flange by the cutting shoulder;

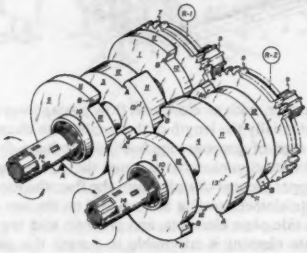
a ring of metal composed of chips and metal cut from said cylinder head by the locking flange, tightly compressed into said annular groove locking the valve seat into the cylinder head.

4,236,496

ROTARY ENGINE

Louie A. Brownfield, 3690 Ridgeway Dr., Los Alamos, N. Mex. 87545

Filed Jul. 24, 1978, Ser. No. 927,477
Int. Cl.³ F02B *53/08*
U.S. Cl. 123—212 **8 Claims**



1. A rotary internal combustion engine comprising, in combination, first and second identical, parallel and adjacent rotary units contained within a housing, each unit cooperating with the said housing and with the rotors to form individual variable volume intake-compressor wheel and power wheel chambers, each rotary unit having a shaft on which is mounted two bearings and three wheels, the outer two wheels acting as an air-fuel intake-compressor and a center power wheel, all of said wheels being of cylindrical shape and each having a lobe comprising an 180° arc of the circumference of the wheel thereby forming a leading and trailing lip, said lobes of the outer wheels being situated 180° opposite the lobe on its center wheel, the lobes of the first rotary unit being 180° opposite the lobes of the second rotary unit, and

(a) means for feeding an air-fuel mixture to the said intake-compressor wheel chambers,

(b) means for transferring the compressed air-fuel mixture from the intake-compressor wheel chambers to combustion chambers located on each side of the center power wheel chamber,

(c) means for igniting the compressed air-fuel mixture contained in the combustion chambers,

(d) means for transferring energy of the ignited fuel mixture from the combustion chamber to the center power wheel chamber,

(e) means for exhausting the expended gases from the center power wheel chamber,

(f) means for intermeshing lobes of the rotary units in a predetermined relationship to each other allowing each of the said units to rotate and provide mechanical energy, and

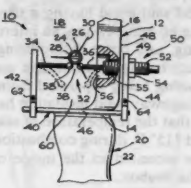
(g) means for liquid cooling the engine.

4,236,497

ARCHERY BOW WITH ARROW REST

Fernando V. Troncoso, Jr., 1851 S. Orange Ave., Monterey Park, Calif. 91754

Filed Jan. 11, 1979, Ser. No. 2,692
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—24 R **6 Claims**



1. An improved archery assembly, said assembly comprising, in combination:

a. an archery bow having an arrow shelf and sidewall defining an arrow window;

b. an archery arrow; and,

c. an improved arrow rest disposed in said window and supporting said arrow for shooting from said bow, said rest including:

i. a flexible resilient pair of rest arms comprising coiled wire springs aligned generally horizontally in said window, spaced above said shelf, defining a gap therebetween and releasably holding said arrow over said gap for free unimpeded flight of said arrow in said space below said resilient arms upon shooting of said bow, and

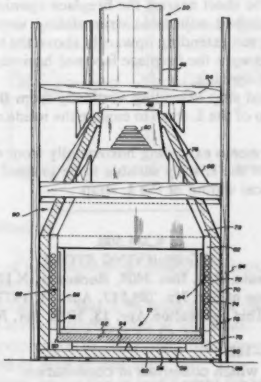
i.i. support means interconnecting said resilient pair of rest arms with said bow, said support means including a connector which secures one of said arms to said sidewall, and a bracket which secures the other of said arms to said bow, said bracket including an element lateral of said window.

4,236,498

SEE THROUGH FIREPLACE

James R. Taliaferro, Springtown, Tex., assignor to Best Metal Products, Dallas, Tex.

Filed Jun. 8, 1978, Ser. No. 913,847
Int. Cl.³ F24B *1/18*
U.S. Cl. 126—120 **6 Claims**



1. A zero clearance dual opening hearth fireplace adapted to be capable of installation in contact with combustible material, comprising:

a firebox disposed over a hearth and formed of two upstanding side walls and front and rear panels, each of said panels defining an opening for providing front and rear access to the hearth;

a hood for connection with the chimney defining a flue internally thereof, said hood disposed above the hearth and connected to said firebox for venting said firebox into a chimney; and

said walls and said hood having a triple insulated structure comprising an outer casing, an intermediate casing and an inner casing, said outer casing being separated from said intermediate casing by insulation material and said intermediate casing being separated from said inner casing by an air passageway, said insulation having sufficient thickness such that the temperature of said outside casing does not exceed 115° F. during combustion, wherein metal heat shields are mounted to the inside casing along the side walls of the firebox.

4,236,499

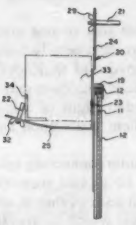
FIRE BOARD

Arthur Simeone, 66 Partridge La., Cherry Hill, N.J. 08033

Filed Jan. 18, 1979, Ser. No. 4,361

Int. Cl.³ F24C *15/10*

U.S. Cl. 126—140 **22 Claims**



1. A fire board for covering a fireplace, said fireplace including a firebox opening and resting against the face of the fireplace opening comprising

(a) at least one sheet of metal which covers an area larger in all dimensions than the fireplace opening,

(b) a frame means following the periphery of the metal sheet,

(c) at least one inverted U shaped clamp means fitting over the frame means and the sheet,

(d) a guide means on the U clamp means capable of holding and allowing a strap to slide up and down vertically on the side of the sheet nearest the fireplace opening,

(e) an L shaped adjustable strap sliding vertically in the guide means extending upwardly above the top of the fire board between the fireplace face and horizontally into the fireplace opening,

(f) a vertical stop extending vertically from the horizontal extension of the L strap to engage the inside of the firebox and,

(g) a knob means extending horizontally from the vertically section of the L strap suitable to be grasped by the hand for vertical sliding of the L strap.

4,236,500

LOG-BURNING STOVE

James R. Choate, P.O. Box 2409, Rochester, N.H. 03867

Continuation of Ser. No. 789,517, Apr. 21, 1977, Pat. No. 4,131,104. This application Apr. 13, 1978, Ser. No. 896,203

Int. Cl.³ F23M *5/00*

U.S. Cl. 126—145 **18 Claims**

1. A stove which comprises in combination:

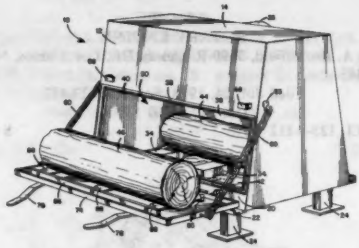
(a) a shell surrounding a combustion chamber;

(b) a flue for the discharge of gaseous combustion products from the combustion chamber;

(c) an entrance door in the shell extending substantially across the width of the stove, the door adapted to be placed between an open and a closed position;

(d) a plurality of refractory plate elements within the shell, which elements define a combustion chamber, the plate elements of a size to permit the insertion of the plate elements through the entrance door and including at least a single back, top, and two opposing side plate elements, the back and side elements in contacting relationship to form a peripheral refractory wall of the combustion chamber;

(e) the top refractory plate element having a width less than that of the top of the side plate elements and positioned at each end on the upper top edge of said side plate elements to define an upper plenum chamber and a lower combustion chamber, with an elongated flow passageway extending substantially the length of the combustion chamber for the passage of gaseous combustion products from the lower combustion chamber through the flow passageway to the upper plenum chamber into the flue, the top refractory plate element resting at each end on the top edge of the said side plate elements, and wherein said top refractory plate element is adjustable to permit the said flow passageway to be positioned between the front and the back of the combustion chamber;



(f) plate clamp means to retain each of the side plates in position within the shell; and

(g) draft control means to permit and control the entrance of air into the combustion chamber.

4,236,501

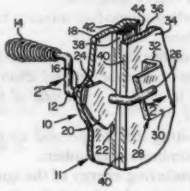
DUAL ACTION SAFETY LATCH FOR STOVE DOOR

Harold C. Bitler, Springfield, Oreg., assignor to Fisher Stove Works, Eugene, Oreg.

Filed Mar. 5, 1979, Ser. No. 17,464

Int. Cl.³ F24C *15/04;* E05C *3/04, 3/02*

U.S. Cl. 126—197 **9 Claims**



1. A latch mechanism for a solid-fuel burning stove and the like having a door movable between a closed position where it closes a doorway opening to the interior of said stove and an open position away from said doorway opening, said latch comprising:

(a) dog means for releasably holding said door in said closed position;

(b) limit means associated with said dog means for requiring a first movement and a distinct second movement of said dog means before said door can be fully moved to said open position, said second movement being possible only upon movement of said door to a partially opened position intermediate said open and closed positions; and

(c) retention means cooperating with said dog means for limiting movement of said door upon said first movement of said dog means to said partially opened position, said partially opened position admitting combustion-supporting air into said interior of said stove.

4,236,502

PORTABLE HEATING SYSTEM

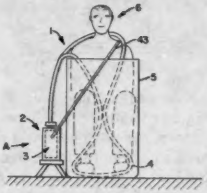
Hans Kühl, Kornbergweg 12, D-7310 Plochingen, Fed. Rep. of Germany

Filed Jun. 15, 1977, Ser. No. 806,853

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2626947

Int. Cl.[2] A61F *7/06*

U.S. Cl. 126—208 **34 Claims**



1. A portable heating system for individuals, which system includes a means for heating a quantity of fluid, an energy source means for supplying a fuel to said heating means, and means operatively connected with said heating means for emitting a quantity of heat, characterized in that the energy source means, the heating means and the heat emitting means are constructed as a structural unit, a portable housing means is provided for accommodating both the energy source means and the heating means, the heating emitting means are insertable into a sheath surrounding an individual so as to provide for thermal requirements of the individual, and in that the heating emitting means is formed essentially of a flexible hose through which the fluid circulates, the flexible hose being connected to the heating means and forming a hermetically sealed system therewith so that a flow gradient is created whereby the fluid flows through the heating system without the provision of a fluid pump.

4,236,503

GRATE WITH ADJUSTABLE VENTS

Wayne T. Kemp, Kutztown, Pa., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 30, 1978, Ser. No. 956,549

Int. Cl.[3] F24C *15/10*

U.S. Cl. 126—215 **7 Claims**

4. A gas-fueled appliance comprising:

at least one burner;

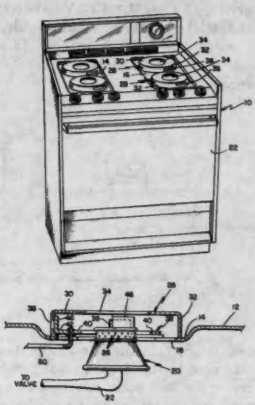
piping means for supplying fuel to the burner to produce a flame when ignited together with resultant combustion flue products;

valve means connected to said piping means and adjustable to vary flow of fuel to the burner and consequently vary the size of the burner flame and the amount of combustion flue products produced;

a gate mounted over said burner for supporting a utensil to be heated and having walls which provide substantially complete enclosure of said burner when a utensil is in position on the grate;

said grate having adjustable venting means for permitting escape of combustion flue products from within the grate through a plurality of vents; and

said adjustable venting means comprises adjustment means for varying the size of said vents in accordance with variations in the size of said burner flame comprising a



ring encircling the burner and rotatable about its axis within the grate, a plurality of arms corresponding in number to the number of vents extending radially from said ring, and shutter elements carried by the ends of said arms and adapted to move with said ring into and out of closing relation to a respective one of said vents.

4,236,504

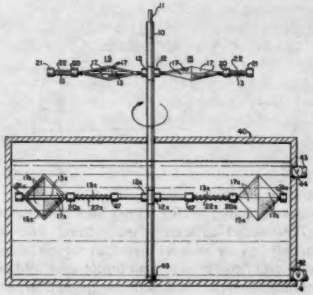
IMPELLERS AND APPARATUS FOR USE THEREWITH

Floyd S. Cornelison, Jr., 16 Stone Hill Rd., Wilmington, Del. 19803

Filed May 14, 1979, Ser. No. 38,455

Int. Cl.[3] F24C *9/00*

U.S. Cl. 126—247 **12 Claims**



1. In combination

a shaft,

a plurality of rods extending radially and horizontally from said shaft,

collapsible cups on said rods fixed at one end and having exposed areas in facing relation to a fluid,

a weight responsive to centrifugal force connected to the other end of each of said cups, and

resilient means connected to said weight for initial positioning of said cups in a predetermined condition of exposed area,

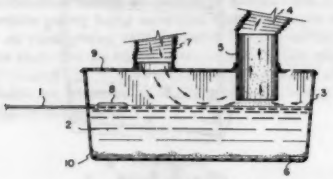
said weights acting with said springs for changing the condition of said cups to change the exposed areas thereof.

4,236,505

FORCED DROPLET HUMIDIFIER

Daniel J. Tarullo, 71 Coventry Ct., Voorheesville, N.Y. 12186, assignor to Daniel J. Tarullo, Voorheesville, N.Y.

Filed Apr. 4, 1979, Ser. No. 15,815
Int. Cl.³ F24H *1/00*
U.S. Cl. 126—350 B **3 Claims**



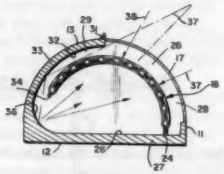
1. A forced droplet humidifier comprising a main body having a float valve to regulate the water supply and level, a removable cover for said body having two openings therein, one for a hot air supply and one for a suction tube, the suction tube being adjustably mounted in a collar so that the bottom of the tube is elevated above the water level to receive water droplets and vapor into the suction tube by the force air operation of a furnace.

4,236,506

SOLAR ENERGY COLLECTOR

Charles F. Roark, 24 Maple La., Brownsburg, Ind. 46112

Continuation of Ser. No. 715,448, Aug. 18, 1976, Pat. No. 4,132,222. This application Dec. 29, 1978, Ser. No. 974,353
The portion of the term of this patent subsequent to Jan. 2, 1996, has been disclaimed.
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—439 **4 Claims**



1. A solar energy collector comprising:

an absorber panel having a flow inlet adjacent a first end and a flow outlet adjacent a second end, said absorber panel further having an inlet manifold region in communication with said flow inlet and an outlet manifold region in communication with said flow outlet and a plurality of passageways for conveying a working fluid, each of said passageways providing flow communication between said inlet manifold region and said outlet manifold region, said absorber panel being part-cylindrical about a horizontal axis and including two opposite edges, every one of said passageways being substantially parallel to said horizontal axis; and

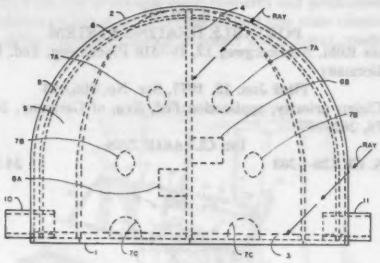
an enclosure surrounding said absorber panel and including a base portion and two enclosing portions, one of said enclosing portions being substantially transparent, one of said edges of said absorber panel being associated with said base portion at a location spaced apart from said substantially transparent portion, the opposite one of said edges being within said enclosure and spaced apart from said enclosing portions and said base portion and accommodating light transmission from outside said enclosure through said transparent portion and around said edge to the interior of said enclosure under said panel.

4,236,507

DOME SOLAR AIR HEATER

Ogden W. Vincent, 2166 La Miel Way, Campbell, Calif. 95008

Filed Oct. 17, 1977, Ser. No. 842,927
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **10 Claims**



1. A dome-like solar heater comprising:

(a) a base having a generally round shape, said base being a structural member, means to hold said base in relation to the earth in such a direction as to receive solar rays, means to insulate said base so as to reduce the passage of heat to the atmosphere, a dark coating being applied to the top of said base for the purpose of absorbing solar rays and producing heat, thereby heating air or gas within said solar heater,

(b) a collector means positioned in the center of said base for the purpose of collecting solar rays and producing heat, said collector means being a plurality of fins which are coated with a dark radiation-absorbing coating, said fins further including holes to allow passage of air or gas therethrough, the outline of said fins being the general shape of said dome-like structure,

(c) a transparent inner cover being supported by said plurality of fins and attached to said base, said inner cover having a gas seal to prevent gas passage therefrom,

(d) a transparent outer cover being supported by said plurality of fins and attached to said base, the shape of said outer cover being a dome-like surface, said outer cover being spaced a small distance from said inner cover so as to have a dead air layer inbetween for insulation, said outer cover providing a gas seal to prevent gas passage therefrom, and

(e) an insulated input pipe being attached to said inner cover, and an insulated output pipe being attached to the opposite side of said inner cover, means to introduce air or gas into the space between said inner cover and said fins and through said output pipe.

4,236,508

SOLAR COOKER AND METHOD OF ASSEMBLY

Barbara P. Kerr, Tempe, Ariz., assignor to Elsa D. Cole, Tempe, Ariz., a part interest

Filed Dec. 11, 1978, Ser. No. 968,303
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—451 **10 Claims**

1. A solar oven comprising:

a first box having an open top,

a second box having an open top of a smaller size than said first box and arranged within and spacedly positioned from the bottom, sides and ends of said first box,

the inside surface of said second box having a heat absorbing surface,

topper spacer means closing the space between said first and second boxes at their open tops,

said topper spacer means comprising two pairs of U-shaped clamps for positioning over the edges of the periphery of the tops of said first and second boxes to cover the space therebetween and hold the boxes in a given position relative to the other,

each clamp of each pair comprising a pair of legs interconnected by a bight,

the legs of said first pair of clamps fitting over the opposed surfaces of different juxtapositioned ends of the first and second boxes,

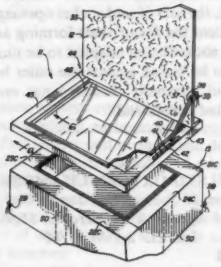
the legs of the second pair of spacers fitting over the opposed surfaces of a different juxtapositioned side of the first and second boxes,

the bights of the clamps covering the spaces between said first and second boxes at their open tops,

a transparent enclosing means comprising a cap lid resting above the edges of the open tops of said first and second boxes and on the topper spacers for closing the open top end of said second box,

said enclosing means comprising a pair of spaced transparent plates having a closed air space therebetween, and

a reflective means of substantially the same size as the opening of said first box hingedly attached to said cap lid for selective movement relative thereto, and



detachable brace means arranged to extend between said reflective means and said top of said cap lid for holding said reflective means in one of a plurality of angular positions relative to the top of said cap lid for directing solar rays into the opening of said second box.

8. A method for assembling a solar oven comprising the steps of:

placing an open top box within a second open top box in spaced arrangement therewith with the peripheries of the opening of said boxes being coplanar,

covering the inside surface of said second box with a heat absorbing material,

filling the space between said boxes with an insulating material,

placing clamp means over the peripheral edges of said first and second boxes for closing the space between the boxes and for holding them in a fixed position one relative to the other,

placing a transparent cap lid, enclosing member comprising a pair of spaced plates enclosing an air space therebetween across the open end of the boxes,

hingedly mounting a reflective surface of a similar size to the opening of said second box on the top periphery of the cap lid for reflecting solar rays into said first box, and

selectively moving said reflective surface to orient it to the sun.

4,236,509

CURVING DEVICE IN AN ENDOSCOPE

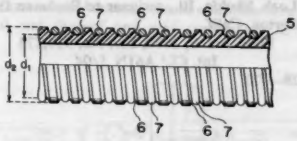
Nagashige Takahashi, Tokiwadai Green Haitsu 602, No. 28-10, Tokiwadai 3-chome, Itabashi-ku, Tokyo, and Nobuhiro Noda, No. 1480-33, Kawashima,, Ranzan-machi, Hiki-gun, Saitama, both of Japan

Filed Nov. 18, 1977, Ser. No. 852,640

Claims priority, application Japan, Dec. 28, 1976, 51/177350[U]

Int. Cl.³ A61B *1/00*

U.S. Cl. 128—4 **4 Claims**



1. In an endoscope of the type comprising a flexible end section which is inserted into a part to be examined, a manual operating section for controlling the curving of said flexible end section, a flexible connecting pipe connecting said flexible end section to said manual operating section and connecting means in said flexible pipe coupling said manual operating section and flexible end section, the improvement in a curving device for said flexible end section comprising:

a guide tube having a smooth interior surface and having a groove in the exterior surface thereof, said groove being shaped such that a wire can be fitted into said groove and wrapped around the tube in the form of a coil;

a hard wire wrapped around said tube and fitted within and in direct contact with the surface of said groove along the length of said tube and forming a coil, the diameter of said wire being substantially equal to the depth and smaller than the width of said groove so that said wire is slidable across the width of said groove during flexing of said tube.

4,236,510

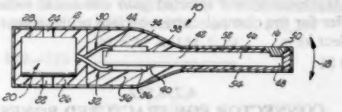
ULTRASONIC TOOTH CLEANING APPARATUS

Edward E. Hatter, 31377 E. Nine Dr., Laguna Niguel, Calif. 92677; Richard H. Taylor, 13691 Gershon Pl., Santa Ana, Calif. 92705, and Richard D. McGunigle, 1135 Picaaho Dr., La Habra Heights, Calif. 90631

Filed Feb. 21, 1979, Ser. No. 12,984

Int. Cl.³ A61H *1/00*

U.S. Cl. 128—24 A **22 Claims**



1. A hand-held ultrasonic tooth-cleaning apparatus having a radiating surface for insertion into an oral cavity to transmit ultrasonic energy from the radiating head to the teeth through a liquid sonic couplant to effect cleaning by cavitation action, said apparatus comprising:

A. a vibrating member including:

1. a body member;

2. a probe coupled to said body member;

(a) said probe defining a radiating surface disposed substantially parallel to the longitudinal axis of said vibrating member;

B. means disposed externally of the mouth for generating ultrasonic energy at a frequency and amplitude sufficient to establish cavitation within said liquid couplant adjacent said teeth; and

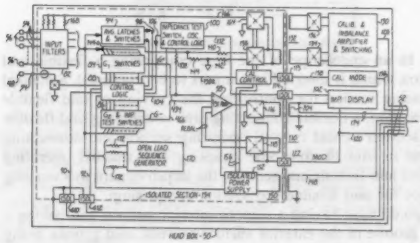
C. means for attaching said ultrasonic generator means to said vibrating member for establishing propagation of ultrasonic energy in said body and said probe in a transverse mode with respect to the longitudinal axis of said body and said probe said radiating surface being positioned at a point of maximum displacement on said probe to maximize the intensity of acoustic energy at said radiating surface.

4,236,511

ELECTROENCEPHALOGRAPH

Phillip J. Loeb, Skokie, Ill., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 9, 1978, Ser. No. 914,273
Int. Cl.³ A61N 5/04
U.S. Cl. 128—731 **6 Claims**



1. In an EEG system having a plurality of patient electrodes each having an identifiable symbol and selectably connectable in pairs to provide the inputs for channels in a multi-channel recorder means for recording traces corresponding to signals developed in said channel, each of said channels having an identifying symbol, amplification means for amplifying analog signals selectively connected to said plurality of electrodes and to said recorder means, selecting means for selecting the gain of said amplification means for each of said channels, said gain being represented by a numerical value, keyboard means including a plurality of channel select keys, digital display means including a group of seven-segment display devices, interconnecting means interconnecting said keyboard means and said digital display means energized by actuation of any one or more of said channel select keys for displaying information on said digital display means, said interconnecting means including means energized by actuation of said channel select keys for displaying on said digital display means said numerical value representing the selected gain numerical value of said amplifier for the channel corresponding to the actuated channel select keys.

4,236,512

CONNECTOR FOR FRACTURED BONES

Jacob Aginsky, 18 Rachel St., Haifa, Israel

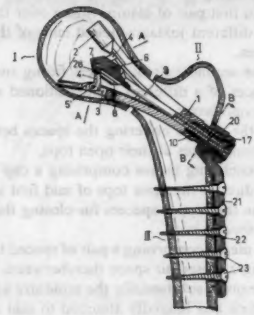
Filed Jan. 22, 1979, Ser. No. 5,103
Claims priority, application Israel, Feb. 12, 1978, 54025
Int. Cl.³ A61F 5/04; A61B 17/18
U.S. Cl. 128—92 BA **4 Claims**

3. A connector for treatment of a fractured femur neck comprising:

a sheath adapted to be inserted with its leading or front end through a bore made in the trochanter region, into the cavity of the femur head, the sheath being of a length sufficient to protrude out of said bore by a short length of its trailing or rear end, said front end being shaped to form at least three resilient tongues adapted to be forcefully expanded in an outward direction toward the cavity walls, the rear of said sheath being provided with external screw threads interrupted by two longitudinally extending flat surfaces on opposite sides and extending along the sheath for a length not less than the length of the thread,

expander means adapted to be operated from the rear end of said sheath for either expanding of reclosing said tongues,

a shaft fixator comprising a flat plate provided with perforations for attaching said plate to the femur shaft by means of screws, said plate being integrally connected to a shaft fixator socket provided with an opening, the rear portion



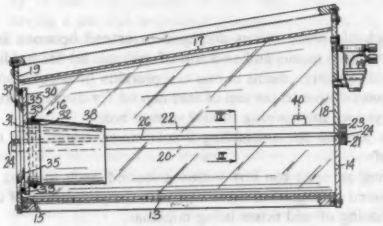
of which is cylindrical while the front portion is oblong corresponding to the shape of the rear end of said sheath and being of sufficient size to receive an internally threaded nut, the axis of said socket opening and said plate surface adjacent the femur shaft forming an angle of 116° to 136°, said socket being adapted to be moved along said sheath and to be biased against the outer bone surface by means of said internally threaded nut movable on said screw threaded sheath end.

4,236,513

PULSED OXYGEN CHAMBER

Rocco W. LoPiano, 26 Journal Sq., Jersey City, N.J. 07306

Filed Apr. 18, 1979, Ser. No. 31,053
Int. Cl.³ A61M 13/00
U.S. Cl. 128—184 **3 Claims**



1. A closable chamber for use in gas treatment of a human limb comprising separable lower and upper portions and a ring-sleeve assembly, the lower portion including an elongated upwardly facing trough having a closed end wall and a partially cut away end wall, the upper portion including an elongated downwardly facing trough having a closed end wall and a partially cut away end wall, each of the upper portion end walls being complementary to the respective lower portion end walls and the cut away walls having beveled edges which cooperate to define a substantially circular opening, the lower and upper portions having matching peripheral edges, upwardly and downwardly facing, respectively, and a vertically compressible sealing gasket being located between said edges, and the ring-sleeve assembly being provided with means engageable with the beveled edges of the circular opening and a

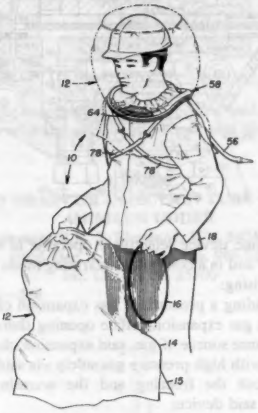
horizontally compressible sealing gasket engageable with the cut away walls.

4,236,514

RESPIRATION SYSTEM

Anthony L. Moretti, San Rafael, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.

Filed Jun. 25, 1979, Ser. No. 51,372
Int. Cl.³ A62B *17/04*
U.S. Cl. 128—201.23 **14 Claims**



1. A respiration system comprising:

a flexible, substantially air impervious cape member having opposed first and second surfaces and defining an aperture and a first orifice, said aperture and said orifice each passing between said surfaces;

a ring structure of sufficient size to surround said aperture and said first orifice, when said ring structure is disposed along one of said surfaces, to define an inner portion of said cape member;

attachment means for attaching said ring structure to one of said surfaces, said ring structure and attachment means co-operating to hold said inner portion in a radially outwardly extending ruff configuration with respect to said first orifice; and,

an air impervious head enclosure being sealingly affixed to said cap member to surround said ruff configuration.

4,236,515

EQUIPMENT SETS AND SYSTEM FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS AT DUAL FLOW RATES EMPLOYING PARALLEL SECONDARY LIQUID TUBING

Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 28, 1979, Ser. No. 16,225
Int. Cl.³ A61M *5/14*
U.S. Cl. 128—214 G **21 Claims**

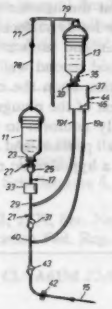
1. A set for the sequential administration of medical liquids to a patient, said set comprising:

a primary tube for the flow of a primary liquid therethrough and including a primary valve for controlling the flow of liquid through said primary tube,

a secondary tube having first and second parallel branches for the parallel flow of a secondary liquid therethrough,

a common tube having its distal end connected in fluid communication with the proximal ends of said primary tube and said first branch of said secondary tube, the proximal end of said second branch of said secondary tube connected in fluid communication to said common tube at a location on said common tube proximal to said connection of said first branch to said common tube said proximal end of said second branch being open for the flow of liquid therefrom to form a primary liquid flow path comprising said primary tube and said common tube and a secondary liquid flow path comprising the combined flow of secondary liquid through a first flow path defined by the portions of said secondary tube common to both branches, said first branch and said common tube and a second flow path defined by the portions of said secondary tube common to both branches, said second branch and said common tube,

a first flow control means on said common tube between the distal end thereof and said connection to said second



branch of said secondary tube for adjusting the flow rate of said primary and secondary liquid therethrough,

a second flow control means in said second flow path for adjusting the flow rate of said secondary liquid therethrough, and,

an air barrier in said second flow path substantially impervious to air while said set is in use and preventing the flow of air therethrough,

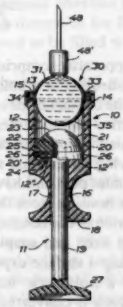
whereby said secondary liquid flows through said secondary liquid flow path at a rate controlled by said first and second flow control means and said primary liquid flows through said primary liquid flow path at a rate independent of the flow rate of said secondary liquid.

4,236,516

SYRINGE AND DISPOSABLE CONTAINER THEREFOR

Nils B. Nilson, Finnstugatan 30, Mjölby, Sweden (S-59500)

Continuation of Ser. No. 684,020, May 7, 1976, abandoned. This application Feb. 16, 1978, Ser. No. 878,267
Int. Cl.³ A61M *5/24*
U.S. Cl. 128—216 **18 Claims**



1. A syringe comprising an elongated barrel having an open

discharge end, a plunger reciprocably mounted in the barrel, a container, means for removably engaging the container to the discharge end of the barrel to form the end wall thereof, said engaging means including a circumferential flange on said container, said flange having at least a flexible periphery for being flexed by the end of the barrel when the container is being engaged as the end wall thereof and for retaining said container as the end wall of the barrel by the tendency of at least said flexible periphery of the flange to restore to its unflexed state, and means on said barrel at said open end for flexing at least said flexible periphery and permitting restoration of said flange toward its unflexed state, said container having a substantially rigid first wall portion at the exterior side of the end wall and having an inside surface, and a flexible second wall portion at the interior side of the end wall and introvertible upon the inside surface of the first wall portion, said plunger having an end surface facing the container and designed to contact said second wall portion and to introvert the flexible wall portion upon the rigid wall portion during reciprocable movement of the plunger, said end surface being shaped to substantially conform to the shape of said inside surface of said first wall portion, and a nozzle on said first wall portion for attaching a hypodermic needle thereto.

4,236,517

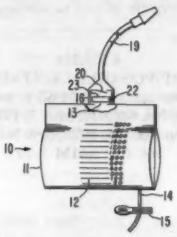
PATIENT-CARE APPARATUS WITH CHEMOPROPHYLACTIC SYSTEM

Jimmy B. Langston, San Jose; Harold Leeper, Mountain View, and Patrick S. Wong, Palo Alto, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 804,962, Jun. 9, 1977, Pat. No. 4,193,403. This application Sep. 24, 1979, Ser. No. 78,503

Int. Cl.³ A61F *5/44*

U.S. Cl. 128—275 **6 Claims**



1. A patient-care apparatus comprising:

(a) container for collecting and holding a biological fluid;

(b) an inlet port in the container for establishing fluid passage between the interior and the exterior of the container;

(c) an exterior housing in communication with the container, said housing having an internal space formed by a wall surrounding the inlet port and having means for engaging and releasing the housing from the container; and,

(d) a dispensing device in the housing, said device consisting of a shaped body sized and adapted for placement in the housing and having a surface exposed to the housing, the body formed of a polymeric material containing paraformaldehyde which is converted to formaldehyde when the apparatus is in use and released by the surface for substantially controlling the presence of pathogen therein.

4,236,518

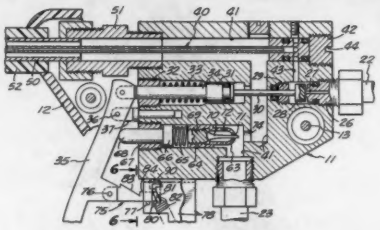
CRYOGENIC DEVICE SELECTIVELY OPERABLE IN A CONTINUOUS FREEZING MODE, A CONTINUOUS THAWING MODE OR A COMBINATION THEREOF

James K. Floyd, La Canada, Calif., assignor to Gyne-Tech Instrument Corporation, Burbank, Calif.

Filed Apr. 14, 1978, Ser. No. 896,495

Int. Cl.³ A61F *7/00*; A61B *17/36*

U.S. Cl. 128—303.1 **44 Claims**



6. A cryogenic device selectively operable in a continuous freezing mode and in a continuous warming mode at the user's option, comprising:

means providing a pressurized gas expansion chamber having a first gas expansion orifice opening thereinto from a high pressure source of gas, said expansion chamber being supplied with high pressure gas solely via said first orifice during both the freezing and the warming operating modes of said device;

exhaust passage means leading from said expansion chamber to the atmosphere and including (a) exhaust valve means movable between open and closed positions and (b) second gas expansion orifice means of substantially smaller predetermined flow capacity than said first expansion orifice and at a rate effective to bleed pressurized gas to the atmosphere from said expansion chamber when said exhaust valve means is in the closed position thereof at a rate such that the flow of said pressurized gas through said expansion chamber is effective to maintain said expansion chamber is a warming mode so long as said exhaust valve means is in said closed position; and

the expansion of said pressurized gas into said expansion chamber through said first orifice means being effective to maintain said chamber in a freezing mode so long as said exhaust valve means remains open.

4,236,519

CORNEAL PUNCH

Joseph A. La Russa, 451 Rutledge Dr., Yorktown Hgts., N.Y. 10598; Richard C. Troutman, 860 United Nations Plaza, New York, N.Y. 10021, and Anthony R. Attler, 74 Price St., Dobbs Ferry, N.Y. 10522

Filed Apr. 6, 1978, Ser. No. 893,938

Int. Cl.³ A61B *17/32*

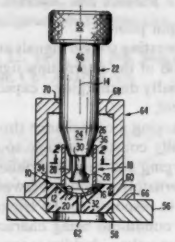
U.S. Cl. 128—305 **6 Claims**

1. A corneal punch for cutting a portion of the cornea of an eye, comprising:

a sleeve with an outer portion that has a conical taper, said sleeve being adapted for insertion within a hollow cylindrical blade that has a cutting edge at its distal end, said insertion causing the proximal end of said blade to contact said tapered portion along a circle;

a plurality of radially adjustable spring members that extends from a central hole at an end of said sleeve; and

a shaft within said sleeve that has a portion that extends from said central hole, said extending portion having the shape



of a right truncated cone that pushes said members into contact with the interior surface of said blade.

4,236,520

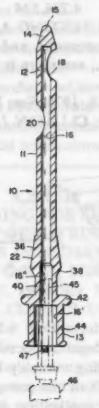
FLUID DRAIN OR INJECTION TUBE FOR AN ANIMAL'S UDDER

Mark L. Anderson, R.R. 2, Elmwood, Wis. 54740

Filed Dec. 4, 1978, Ser. No. 965,923

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—348 **3 Claims**



1. A fluid drain or injection tube of smooth plastic material for insertion in a teat of an animal's udder, comprising an elongated laterally bendable, rigid tubular body with a closed end and an open opposite end, and with an axial bore in said body terminating at said closed end and open at said open end, said body comprising:

a first cylindrical section terminating in a rounded tip at said closed end to facilitate entry into a teat of an udder, with axially elongated and axially spaced slot-like openings on opposite sides of said cylindrical section communicating with said bore to pass fluid into and out of said bore,

an intermediate tapered imperforate section of enlarged diameter axially aligned with and integral with said first cylindrical section, said tapered imperforate section having two oppositely tapered portions, the first tapered portion extending axially outwardly from said enlarged diameter to a further enlarged diameter and the second tapered section extending axially inwardly from said further enlarged diameter to said enlarged diameter in reentrant fashion for retaining the same in said teat,

a body section of greater enlarged diameter then said further enlarged diameter adjacent to said intermediate tapered imperforate section serving as a stop element to limit axial insertion of said body into said teat, said body section having a second cylindrical section at said open end of said body serving as a handle to facilitate insertion of said body into said teat and removal therefrom,

said bore having,

a first cylindrical portion in said first cylindrical section,

a second cylindrical portion in said second cylindrical section wider in diameter than said first cylindrical portion for receiving a cylindrical end of a medicament applicator, and

a tapered portion in said intermediate section for frictionally gripping a tapered end of said medicament applicator when inserted into said body through said open end thereof; and

a plug connected by an integral flexible strap to said body for insertion into said second cylindrical portion to close the same and retaining fluid in said teat.

4,236,521

PROBE

Friedrich G. Lauterjung, Schallstrasse 6, 5000 Cologne 41, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,373

Claims priority, application Fed. Rep. of Germany, May 13, 1977, 2721548

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—348 **18 Claims**

1. A probe means, particularly for enteral feeding of living creatures extending from the outside in an inserted condition in the creatures, comprising

a hollow probe tube defining an insertion end,

a balloon constituting an end portion of said probe tube being coordinated to said insertion end of said probe tube and communicating therewith for filling the balloon, said balloon being adapted to be filled with liquid through said probe tube,

a separate pilot probe along said probe tube constituting exclusively means for initially inserting said balloon in a push-in path and said insertion end of said probe tube partially into the living creature,

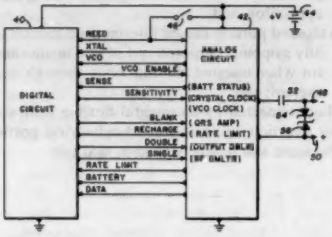
means for emptying said balloon in an inserted condition detached completely from said pilot probe,

said pilot probe extending up to said end portion of said probe tube, grasping said balloon at a portion other than an end of said balloon, said pilot probe non-fluidly communicating with said balloon, and being completely separable from said balloon, said pilot probe further being removable from the living creature without said balloon, the latter remaining in communication with the outside via said probe tube.

4,236,522
ASYNCHRONOUS/DEMAND MADE PROGRAMMABLE DIGITAL CARDIAC PACEMAKER

Ray S. McDonald, St. Paul, and Martin A. Rossing, Anoka, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 6, 1978, Ser. No. 957,963
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PG 10 Claims

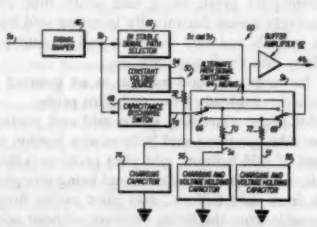


1. In a programmable cardiac pacemaker pulse generator having programmable memory means storing data bit words for controlling modes of operation or parameters of said pulse generator including the demand or the asynchronous modes which includes a pair of output terminals, at least one of which is adapted to be electrically coupled to the heart; resettable pulse generating means for providing a cardiac stimulating pulse to said terminals a certain escape interval time after being reset and for thereafter being reset; sense amplifier means for sensing electric signals applied to said terminals from the heart, which electric signals manifest natural heart activity, and for providing a signal to reset said pulse generating means whenever said sensed electric signals occur after the provisions of a refractory signal; and refractory means for providing said refractory signal a certain refractory time after said pulse generating means is reset, the improvement comprising: selecting means responsive to said programmable memory means for providing said reset signal each time said sense signal occurs after a programmed refractory time, manifested by a refractory signal, said refractory time being capable of being programmed by an N data bit word to 2^N-1 programmed refractory times less than said certain escape interval time, whereby the demand mode is programmed, and further capable of being programmed by said N data bit word to be at least as great as said certain escape interval time whereby said asynchronous mode is programmed.

4,236,523
FREQUENCY TO VOLTAGE CONVERTER FOR CARDIAC COMMUNICATION SYSTEM

Stanley L. Gruenenwald, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 6, 1978, Ser. No. 958,202
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PT 16 Claims



1. In a system operatively connected to a heart, a demodulator for converting the frequency of a frequency modulated alternating signal carrying information related to coronary function to a corresponding voltage, said demodulator comprising:

a voltage output point;

means for generating trigger signals at intervals proportional to the period of the alternating signal;

means for initially discharging a capacitance in response to a trigger signal;

means for charging a capacitance through a resistance from a substantially constant voltage source;

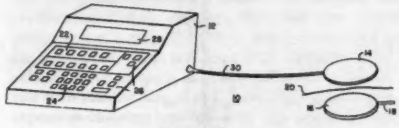
a pair of charging and voltage holding capacitors; and

means for alternately selecting between a pair of signal path conditions in response to the trigger signals, one of said signal path conditions being characterized by one of said charging and voltage holding capacitors being connected both to said means for initially discharging a capacitance and to said means for charging a capacitance and the other of said charging and voltage holding capacitors being connected to said voltage output point, and the other of said signal path conditions being characterized by said other of said charging and voltage holding capacitors being connected both to said means for initially discharging a capacitance and to said means for charging a capacitance and said one of said charging and voltage holding capacitors being connected to said voltage output point.

4,236,524
PROGRAM TESTING APPARATUS

Richard M. Powell, Minneapolis, and Katherine H. Anderson, Fridley, both of Minn., assignors to Medtronic, Inc., Minneapolis, Mich.

Filed Nov. 6, 1978, Ser. No. 958,064
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PT 5 Claims



1. Apparatus for determining whether a programmable pacing generator has been successfully programmed, said pacing generator including memory means for receiving and storing signals indicative of the parameters and/or modes of operation to control the application of its stimulating pulses to a patient's heart, means responsive to the storage of the encoded signals within the memory means to provide an indication thereof, and generator means responsive to the indication for generating test pulses in addition to the stimulating pulses, indicative of the successful programming of said pacing generator, said apparatus comprising:

(a) keyboard means for receiving and entering by operator manipulation parameters and/or modes of operation in which to program said pacing generator;

(b) transmitter means responsive to the mode of operation and/or parameters entered via said keyboard means for encoding and transmitting corresponding signals to said pacing generator;

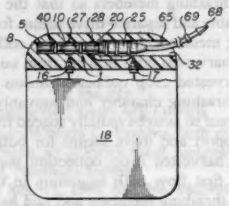
(c) means coupled to the patient's body for sensing the patient's heart activity signals including the stimulating pulses and test pulses; and

(d) means responsive to the transmission of the encoded signals to said pacing generator for initiating the detection of the characteristics of the test pulse and for determining whether the detected characteristics meet given criteria and if so, for providing a manifestation that said pacing generator has been successfully programmed.

4,236,525
MULTIPLE FUNCTION LEAD ASSEMBLY

James E. Sluetz, Lake Jackson, and Richard V. Calfee, Houston, both of Tex., assignors to Intermedics, Inc., Freeport, Tex.

Filed Nov. 22, 1978, Ser. No. 963,128
Int. Cl.[3] A61N 1/04
U.S. Cl. 128—419 P 9 Claims



1. Apparatus for connecting a body implantable tissue stimulator and lead assembly, comprising

at least two distal electrodes on said lead assembly for electrical stimulation or sensing,

at least two coaxial proximal connectors on said lead assembly axially spaced apart and electrically connected to said distal electrodes for connecting said distal electrodes with said tissue stimulation means,

a female connector assembly on said body implantable tissue stimulator adapted to electrically connect said proximal connector to said stimulator,

insulator means intermediate adjacent ones of said coaxial proximal connectors having fluid sealing ribs cooperating with said female connector assembly for maintaining fluid isolation between said connectors.

4,236,526
METHOD OF SCREENING FOR SICKLE CELL DISEASE BY DETECTION OF PORPHYRINS AND PORPHYRIN METABOLITES IN HUMAN DENTITION

Patricia A. Richard, 412 Gulf St., Milford, Conn.

Filed Jan. 31, 1978, Ser. No. 873,979
Int. Cl.[2] A61B 5/00
U.S. Cl. 128—633 14 Claims

1. A clinical method for detecting the presence of porphyrins and porphyrin metabolites associated with sickle cell disease, in a patient whose systemic manifestations do not indicate occurrence of congenital erythropoietic porphyria, comprising:

(a) cleaning the teeth of said patient,

(b) exposing the outer surface of said cleaned teeth in vivo to a source of excitation spectra light,

(c) detecting fluorescence, whereby the presence of said porphyrins or porphyrin metabolites is determined by emission of characteristic fluorescence which can be observed visually, and

(d) determining the presence of sickle cell disease based on the results of said detection.

4,236,527
CARDIAC OUTPUT DETECTION BY MULTIPLE FREQUENCY THERMODILUTION

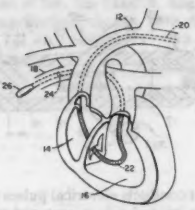
Ronald S. Newbower, Acton, and James H. Philip, Chestnut Hill, both of Mass., assignors to Massachusetts General Hospital, Boston, Mass.

Filed Oct. 20, 1978, Ser. No. 953,124
Int. Cl.[3] A61B 5/02
U.S. Cl. 128—692 14 Claims

1. Apparatus for cardiac thermodilution measurement comprising:

means for applying a traceable signal by injection of thermal energy for dilution in the blood flow in a location upstream of a heart output conduit;

means for varying the magnitude of the traceable signal as a function of time at at least two frequencies thereby varying the amount of thermal energy applied to the blood flow;



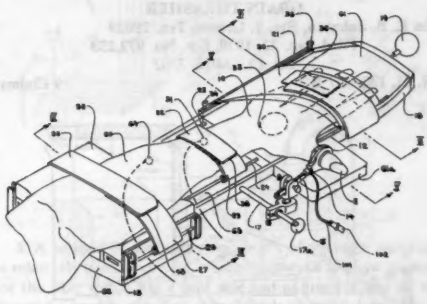
means for detecting said traceable signal as blood flow temperature downstream of the heart ventricle at the first of said at least two frequencies; and

means for separately detecting at least the second of said at least two frequencies in said traceable signal as blood flow temperature downstream of the ventricle of said heart.

4,236,528
APPARATUS AND METHOD FOR THE QUANTITATIVE MEASUREMENT OF THE ISOMETRIC CONTRACTION OF THE ADDUCTOR POLLICIS MUSCLE

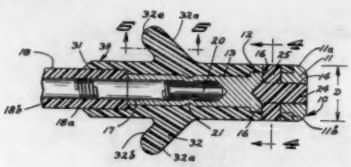
Anna Stanec, and George Stanec, both of 15 Secor Rd., Scarsdale, N.Y. 10583

Filed Dec. 28, 1978, Ser. No. 974,076
Int. Cl.[3] A61B 5/05
U.S. Cl. 128—741 12 Claims



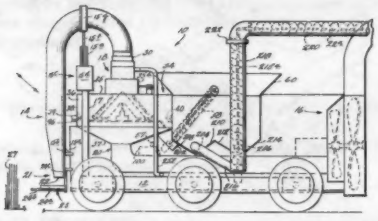
1. Apparatus for engaging a hand and thumb on the forearm of a human subject or the like and for measuring quantitative changes in isometric tension in the associated adductor pollicis muscle in response to stimulation of the associated ulnar nerve, said apparatus comprising engaging means for engaging and immobilizing said hand, thumb holding means having an opening alignable generally perpendicular to the thusly engaged hand for receiving and holding said thumb, transducer means operatively associated with said thumb holding means for converting isometric tension developed in said adductor pollicis muscle in response to said ulnar nerve stimulation into an electrical signal, and adjustable positioning means to adjust the positioning of said thumb holding means and the alignment of said opening so that said thumb can be immobilized in fully abducted position and so that said transducer means can measure the isometric tension in the the adductor pollicis muscle.

4,236,529
TINED LEAD
Richard L. Little, Minneapolis, Minn., assignor to Daig Corporation, Minnetonka, Minn.
Filed Feb. 21, 1979, Ser. No. 13,129
Int. Cl.³ A61N 1/04
U.S. Cl. 128—785 **14 Claims**



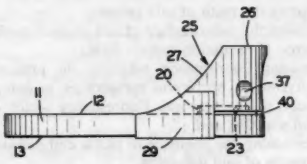
1. For a lead that conducts electrical pulses to body tissue, an electrode having a central axis, a rear end portion; and a tip having a front tip surface adapted to be placed in electrical conductive relationship to body tissue and tined means joined to the electrode for attachment to trabeculations to aid in retaining the tip in electrical conductive relationship to body tissue, the tined means including a tine inclined relative the electrode to extend outwardly therefrom in a direction from the tip surface toward the rear end portion, one dimension of the tine in a plane perpendicular to the direction of extension of the tine away from the electrode being substantially greater than a second dimension of the tine in the same plane that is at right angles to said one dimension, and a tubular portion surrounding the electrode and having a front end portion disposed adjacent the front tip surface and a rear end portion disposed adjacent the electrode rear end portion and more remote from the tip front surface than the tine, the tine being integrally joined to the tubular portion intermediate its front and rear end portions to extend outwardly thereof in a direction away from the tip surface.

4,236,530
GRAIN THRASHER
John L. B. Johnson, Rte. 1, Groom, Tex. 79039
Filed Dec. 22, 1978, Ser. No. 972,233
Int. Cl.³ A01E 7/02
U.S. Cl. 130—27 R **9 Claims**



1. An improved thrashing machine for thrashing a variety of crops comprising a main frame including at least front and rear axles together with wheels for supporting the thrashing machine, motor means for powering the thrashing machine, steering means for controlling the movement of the thrashing means, means defining a first flow path having a first stage for initially moving the crop being cut and a second stage for moving only chaff and weeds, means defining a second flow path for moving only the harvested crop, said first flow path means including vacuum means for producing a suction type air flow along first flow path means, said first stage including crop collection means for cutting and initially receiving the crop, a thrashing assembly for receiving the cut crop and for separating the crop being harvested from chaff and weeds cut therewith, said thrashing assembly including a hollow housing structure having top, side and bottom wall members defining a thrashing chamber therein, said crop collection means being movably connected to the topwall member thereby defining the inlet to said thrashing chamber, interior and exterior rotatably supported, conically-shaped, thrashing members spaced from one another and being centrally positioned within the thrashing chamber to receive between them the cut crop entering through the inlet so that the suction air flow passes between the two thrashing members, means for moving at least one of said thrashing members so that the distance therebetween is variable and separate drive means for rotating each of the thrashing members, harvested crop collection means for catching the harvested crop flowing from said thrashing members, said harvested crop collection means being positioned within said thrashing chamber and movably attached to the sidewalls thereof so as to be radially spaced from said thrashing members, support and drive means for both supporting and moving said harvested crop collection means, said second stage of said first flow path beginning in the space defined between said thrashing members and said harvested crop collection means, said second stage including at least the bottom wall of said thrashing chamber, means defining an outlet opening therein, and first conduit means connected between the outlet opening in the bottom wall of said thrashing chamber and said vacuum means, first discharge means connected to said vacuum means for discharging chaff from said thrashing machine, said second flow path including second vacuum means for creating a vacuum type suction in the second stage of said first flow path, initial storage means for sequentially collecting and discharging measurable quantities of the harvested crop, second conduit means for withdrawing the harvested crop from said harvested crop collection means, said second conduit means connected to initial storage means, and third conduit means connecting said second vacuum means and said initial storage means, said thrashing machine further including primary storage means for receiving the harvested crop discharged from said initial storage means, means for moving the harvested crop discharged from said initial storage means to said primary storage means and second discharge means for discharging the harvested crop from said primary storage means.

4,236,531
ROTARY BLADE HOLDER
Timothy J. McCullough, Box 295, Lake Rd., Vermilion, Ohio 44089
Filed Jul. 30, 1979, Ser. No. 61,593
Int. Cl.³ A22C 17/12; B26B 15/00
U.S. Cl. 30—276 **9 Claims**



1. A blade holder construction for a meat-cutting tool including:
(a) an annular-shaped metal ring split at one point on its periphery;
(b) an interior, annular groove formed in the ring for rotatably mounting a complementary shaped cutting blade therein;
(c) a pair of axially extending arcuate flanges formed integrally with the metal ring and located on opposite sides of the split;
(d) a pair of plastic arcuate-shaped lugs molded on the ring flanges and projecting upwardly from and circumferen-

tially along a portion of the ring on both sides of the split for attaching the blade holder to a power-driven handle;

(e) a semicircular recess formed in each of the plastic lugs in juxtaposition to each other to form a generally circular-shaped gear-receiving recess; and

(f) a radially extending mounting hole formed in each of the lugs adapted to receive attachment screws therein.

4,236,532

SMOKING ROD WRAPPER

Alfred D. Schweizer; William G. Erskine, both of Geneva, and Daniel Turpin, Nyon, all of Switzerland, assignors to Gallaher Limited, Belfast, Northern Ireland

Filed Sep. 11, 1978, Ser. No. 940,996

Claims priority, application United Kingdom, Sep. 16, 1977, 38710/77

Int. Cl.³ A24B *15/42*; A24C *5/60*; A24D *1/02*

U.S. Cl. 131—9 **22 Claims**

22. A smoking rod of the kind comprising a filler of smoking material surrounded by a combustible tubular wrapper, the improvement wherein the filler is upgraded by the provision on the inner surface of the wrapper of a screen printed deposition of a series of discrete dots of an ink containing at least one additive selected from the group consisting of a smoke producing agent, a smoke nucleation agent, a flavouring agent, and a physiologically active agent, which will in use, upon approach of the hot burning tip of the smoking rod, be transferred and contribute to the main stream smoke drawn through the rod to enhance the satisfaction to the smoker, wherein the dots are printed over a selected area of the wrapper to provide a greater concentration of the additive at that end of the rod to be the lit end of the rod.

4,236,533

NOVEL CIGARETTE PROCESS AND PRODUCT PRODUCED THEREFROM

Maximilian de Clara, Munich, Fed. Rep. of Germany, assignor to TKR Tabak Forschnugs-GmbH & Co., Munich, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 29,857

Int. Cl.³ A24B *15/28*

U.S. Cl. 131—17 R **9 Claims**

1. A tobacco composition comprising tobacco and an active agent comprising a mixture of auric oxide, silver nitrate or sulfate, platinum tetrachloride and cerium salts selected from the group consisting of carbonates, sulfates and nitrates in an effective amount to reduce the raw condensate nicotine and polycyclic aromatic hydrocarbons content which are normally produced by the combustion of the tobacco in the tobacco smoke.

4,236,534

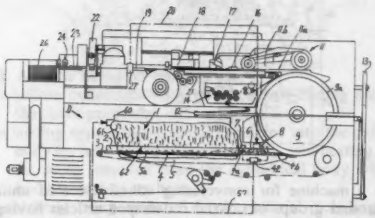
METHOD AND APPARATUS FOR MONITORING THE HEIGHT OF A STREAM OF TOBACCO OR THE LIKE

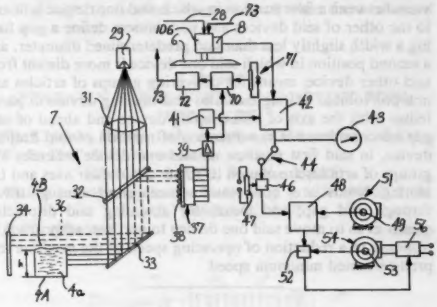
Uwe Heitmann, Schwarzenbek; Wolfgang Steiniger, Börnsen; Uwe Holznagel, Glinde; Hartmut Kaebernick; Joachim Pfannmüller, both of Hamburg, and Joachim Reuland, Neu Börnsen, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 821,179, Aug. 2, 1977, Pat. No. 4,190,061. This application Aug. 15, 1978, Ser. No. 933,789

Int. Cl.³ A24C *5/14, 5/39*

U.S. Cl. 131—21 B **5 Claims**





1. A method of measuring the height of a stream, especially a relatively narrow stream, which consists of tobacco particles or the like, which has a first side and an uneven second side located opposite the first side, which contains a surplus of particles and from which the surplus is about to be removed prior to draping of the resulting equalized stream into a web of wrapping material and subdivision of the draped equalized stream into discrete rod-shaped articles, comprising the steps of moving the stream lengthwise along a predetermined path including contacting the first side of the stream; optically scanning the distance between said first and second sides of successive increments of the moving stream including establishing a source of light rays and directing said light rays across the moving stream at different distances from said first side of the stream so that the number of light rays which are intercepted by an increment of the stream is indicative of the height of the respective increment, said directing step including reflecting the non-intercepted rays back across the moving stream; and generating signals denoting the number of reflected rays.

4,236,535

APPARATUS FOR CONVOLUTING ADHESIVE-COATED UNITING BANDS AROUND ROD-SHAPED ARTICLES

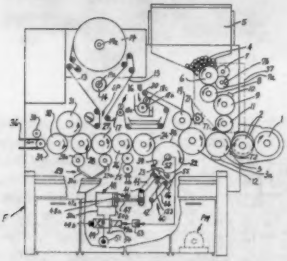
Rolf Schmidt, Glinde, and Herbert Berlin, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,860

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1977, 2752173

Int. Cl.[3] A24C *5/47*

U.S. Cl. 131—21 R 10 Claims



1. In a machine for convoluting adhesive-coated uniting bands around groups of coaxial rod-shaped articles having a predetermined diameter, the combination of a rotary draping device; a rolling device; means for heating at least one of said devices; displacing means actuatable to move one of said devices between a first position in which said one device is nearer to the other of said devices and said devices define a gap having a width slightly less than said predetermined diameter, and a second position in which said one device is more distant from said other device; means for delivering groups of articles and non-convoluted uniting bands to said draping device in parallelism with the axis of said draping device and ahead of said gap, as considered in the direction of rotation of said draping device, in said first position of said one device whereby the groups of articles are caused to rotate about their axes and the uniting bands are convoluted therearound during travel through said gap; and means for actuating said displacing means so as to move said one device to said second position in response to a reduction of operating speed of the machine to a predetermined minimum speed.

4,236,536

METHOD FOR WRAPPING CIGARS OR LIKE ARTICLES IN AN OUTER ENVELOPE OF NATURAL TOBACCO

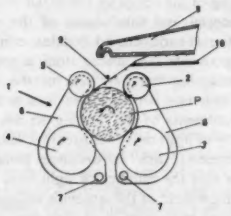
Pierre Waegaert, Bordeaux, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumette, France

Filed Mar. 23, 1978, Ser. No. 889,204

Claims priority, application France, Mar. 31, 1977, 77 09684

Int. Cl.[3] A24C *1/04, 1/28, 1/30*

U.S. Cl. 131—33 2 Claims



1. In the method of wrapping cigars or like articles in an outer envelope of natural tobacco leaf, the improvement which comprises cutting out at least one first wrapper from a half of a non-stripped, at least partially spread out tobacco leaf lying on one side of the midrib of said leaf; turning the leaf over onto its other face; spreading out the uncut half-leaf; cutting out at least one second wrapper from said uncut half-leaf, said first and second wrappers being aligned with their raised portions facing in opposite directions; feeding said aligned wrappers into a cigar rolling machine operable to wrap cigar wrappers about an unwrapped cigar core, so that the raised portions of said first wrapper face the outer surface of the core when being wrapped around said core; and prior to feeding said second wrapper into said machine, reversing the direction of rolling so that the raised portions of said second wrapper also face the outer surface of the core being wrapped.

4,236,537

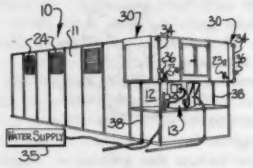
ORDERING SYSTEM FOR TOBACCO BULK CURING BARN

Gary H. Fisher, Rockingham, N.C., assignor to Industrial Sheet Metal & Mechanical Corp., Rockingham, N.C.

Filed May 3, 1978, Ser. No. 902,275

Int. Cl.[3] A24B *3/02*

U.S. Cl. 131—134 2 Claims



1. In a method for bulk curing tobacco wherein the tobacco is supported in a relatively compact mass within the curing chamber of a bulk curing barn, said method comprising the steps of directing air in a recirculating flow repeatedly passing into and through the curing chamber and into contact with the compact mass of tobacco positioned therein while controllably heating the air to cure and dry the tobacco located in the curing chamber, the combination therewith of a method for quickly and controllably restoring moisture to the cured and dried tobacco prior to removal of the tobacco from the curing chamber to thus facilitate subsequent handling of the tobacco, said method comprising the steps, performed upon the completion of the curing and drying of the tobacco in the curing chamber, of continuing to direct air in a recirculating flow repeatedly passing into and through the curing chamber of the curing barn and into contact with the compact mass of cured and dried tobacco positioned therein while also drawing air from outside the curing barn into the barn and through a porous pad wetted with water to humidify the air on entering the curing barn, and directing the thus humidified outside air into the recirculating flow of air through the curing chamber to thus quickly and controllably increase the humidity level within the curing chamber and thereby restore moisture to the tobacco and facilitate subsequent handling thereof.

4,236,538

SMOKING ARTICLES

Norman Foster, Southampton, and Alan G. Stephenson, Ringwood, both of England, assignors to British-American Tobacco Company Limited, London, England

Filed Sep. 28, 1977, Ser. No. 837,538

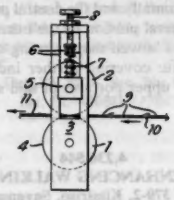
Claims priority, application United Kingdom, Oct. 4, 1976, 41102/76; Nov. 26, 1976, 49446/76; Jan. 25, 1977, 2985/77

Int. Cl.[3] A24B *3/00, 3/14*

U.S. Cl. 131—149 14 Claims

1. A method of lap joining pieces of natural tobacco,

wherein the said pieces are placed in overlapping relationship and the overlapping portions thereof are cohered to each



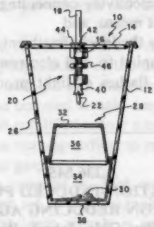
other, without adhesive to effect the joining, by the application to them of pressure.

4,236,539

SMOKING APPARATUS

John S. Mosby, Jr., 2008 Christie La., Carrollton, Tex. 75006, assignor to John S. Mosby, Jr. and L. Gregg Sealy, both of Dallas, Tex.

Filed Sep. 27, 1978, Ser. No. 946,198
Int. Cl.³ A24D *1/12, 1/30*
U.S. Cl. 131—175 **8 Claims**



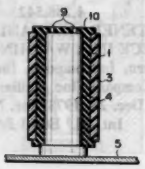
1. A smoking apparatus comprising, in combination:
a conventional drink container;
a cover for covering the conventional drink container of a type normally suitable for such a conventional drink container, forming a hole therethrough;
a mouthpiece positioned to appear to be for drinking from the conventional drink container of a type normally suitable for such a conventional drink container and cover;
a plumbing insert for holding a cigarette or the like in a downward direction inside of the conventional drink container;
a plumbing insert for holding the mouthpiece, going through the hole in the cover, the lip of the plumbing insert resting on top of the cover; and
a plumbing fitting connecting the two inserts together, whereby the plumbing insert for holding the cigarette or the like and the mouthpiece are so connected that a continuous passageway is formed from a cigarette or the like held in the insert through the mouthpiece whereby the cigarette or the like can be smoked while it is in the conventional drink container by puffing on the mouthpiece.

4,236,540

PLIABLE AND RESTORABLE HAIRSETTER

Shoji Takagi, Toyoake, and Nobuo Ito, Nagoya, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation-in-part of Ser. No. 808,386, Jun. 20, 1977, abandoned. This application Apr. 20, 1979, Ser. No. 31,965
Claims priority, application Japan, Jul. 5, 1976, 51-89648[U]
Int. Cl.² A45D *2/00*
U.S. Cl. 132—40 **9 Claims**



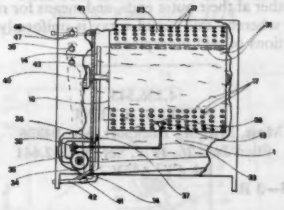
1. A home hairsetter comprising:
a hollow cylindrical body having a hair-curling section on the outer periphery; and
a heating apparatus adapted to be fitted into the cylindrical body for heating the cylindrical body, said heating apparatus being removed from the cylindrical body while said body is used to set hair;
said body being made of elastic material including silicon rubber and being restorable, and being so pliable that when used to set hair with a head load exerted thereon which is more approximately 2 kg, said body flattens so that it gently touches the user's head when the user's head is in a prone position.

4,236,541

APPARATUS FOR WASHING AND DRYING FOOD PRODUCTS

Tullio Cipriani, Parma, Italy, assignor to Hoonet s.a.s. di Indro Paolo Dall' & C, Varese, Italy

Filed May 3, 1979, Ser. No. 35,552
Claims priority, application Italy, May 4, 1978, 40068 A/78
Int. Cl.³ B08B *3/02, 3/06*
U.S. Cl. 134—104 **8 Claims**



1. Apparatus for washing and drying food products, in particular vegetables and fruit, comprising: a first stationary container equipped with first and second means for discharge of water; a second container housed in said first container and equipped with a door for the charge and discharge of the food products; a plurality of through holes provided in the side surface of said inside container; stationary ejection means to create a swirling and turbulent flow of water to carry out the washing stage, said ejection means being connected to a source of water under pressure and being housed in said first stationary container but outside said second container near the side surface thereof, which injection means are directed towards the inside of the second container; blocking means for fixing said second container with respect to said first container dur-

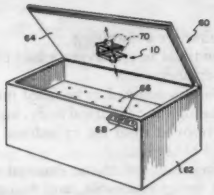
ing the washing stage; control means to rotate, after having disconnected the said blocking means, said second container around a stationary axis, after the washing stage and after the water discharge, for a centrifugal drying of said products; said first water discharge means being suitable to maintain in said stationary container during the washing stage a constant predetermined water level; said second discharge means being suitable to regulate the change of water during the washing stage and to discharge the water from the apparatus after the last washing.

4,236,542

ROTATING FASTENER MECHANISM FOR HOLDING A WORKPIECE IN A WASHING APPARATUS

Charles E. Fishburn, Indianapolis, Ind., assignor to National Printing Plate Company, Inc., Indianapolis, Ind.

Filed Dec. 26, 1978, Ser. No. 972,980
Int. Cl.³ B08B 3/02
U.S. Cl. 134—153 **17 Claims**



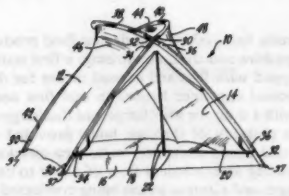
3. Apparatus for washing a workpiece comprising a compartment within which the workpiece is situated for washing, means for providing a liquid spray, means for sealing said compartment, a rotatable mechanism for holding said workpiece carried within said compartment and including a plurality of arm members connected together to permit expansion and contraction of the mechanism and carrying workpiece retaining means capable of a variably spaced interval by such expansion and contraction, said arm members including first and second inner arm members pivotally coupled to each other at their respective centers, said first inner arm member having pivotally coupled to each of its ends third and fourth outer arm members and said second inner arm member having pivotally coupled to each of its ends fifth and sixth outer arm members, said third and fifth outer arm members and said fourth and sixth outer arm members respectively being pivotally connected together at their outer ends, and means for rotating said mechanism whereby said liquid spray is uniformly applied to various portions of said workpiece.

4,236,543

PORTABLE TENT

Charles W. Moss, Mill St., Rockport, Me. 04806

Filed Jun. 26, 1979, Ser. No. 52,441
Int. Cl.³ A45F 1/16
U.S. Cl. 135—3 R **13 Claims**



1. A portable shelter comprising a flexible covering having opposing side walls held tense to provide the shape of the shelter by two resiliently flexible pole members held in a flexed condition by peripheral portions of said side walls, each said pole member having the end portions thereof held respectively by front and rear peripheral portions of the same side wall to hold the pole member in an inverted generally U-shape tensing said side walls horizontally and the central portion thereof held by the upper peripheral portion of the other side wall to hold the pole member in a bowed shape tensing said other side wall vertically, said fabric covering further including a top wall interconnecting the upper portions of said side walls.

4,236,544

SAFETY-ENHANCING WALKING STICK

Takeshi Osaka, No. 379-2, Kitairiso, Sayama-shi, Saitama-ken, Japan

Filed Dec. 28, 1978, Ser. No. 973,809
Claims priority, application Japan, Feb. 24, 1978, 53-19762
Int. Cl.³ A45B 3/04
U.S. Cl. 135—66 **11 Claims**

1. A safety-enhancing walking stick to provide a flashing light warning signal, comprising:

a tubular casing having a least one portion which is translucent;

a light source for providing flashes of light, disposed within said tubular casing adjacent to said portion of said tubular casing which is translucent;

electronic circuit means disposed within said tubular casing, and coupled to said light source for periodically actuating said light source to provide said flashes of light;

a battery disposed within said tubular casing for supplying power to said electronic circuit means;

switch means for selectively connecting said battery to said electronic circuit means; and

means for detecting the level of ambient light, said detecting means being coupled to said electronic circuit means for controlling said flashes of light produced by said light source.

4,236,545

USE OF RADIATION-INDUCED POLYMERS AS FRICTION REDUCING AGENTS

Bruce L. Knight, Findlay, Ohio; John S. Rhudy, and William B. Gogarty, both of Littleton, Colo., assignors to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 739,686, Nov. 8, 1976, abandoned, and a continuation-in-part of Ser. No. 303,742, Nov. 6, 1972, abandoned. This application Dec. 30, 1977, Ser. No. 866,073
Int. Cl.² F17D 1/17
U.S. Cl. 137—13 **29 Claims**

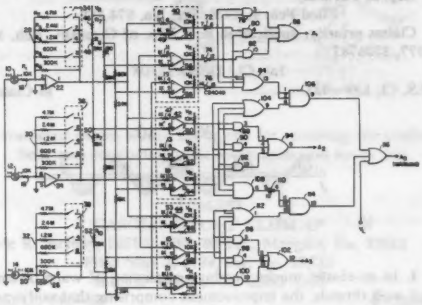
1. A process for reducing the fluid flow friction loss of a fluid comprised of a water phase being transported through a conduit, the process comprising admixing with the water phase a polymer obtained as a product of high energy ionization radiation polymerication of an adqeous solution consisting essentially of about 40 to about 90% of water and about 10 to about 60% by weight of at least one monomer selected from the group consisting of acrylamide, methacrylamide, acrylic acid, methacrylic acid, alkali metal acrylate, alkali metal methacrylate and mixtures thereof, the radiation intensity being about 250 to about 1,000,000 rads/hr and the radiation dose being about 500 rads to about 300,000 rads, the polymer being present in sufficient concentration and having sufficient property to reduce the fluid flow friction loss, and thereafter transporting the fluid in the conduit.

4,236,546

ELECTRONIC BREATHING MIXTURE CONTROL

Claude E. Manley, LaPlata; John J. Pennella, Pomfret; Donald J. Deaton, Rison; Alan L. Crandall, Indian Head, and James P. Hersey, Bryans Rd., all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 23, 1978, Ser. No. 953,510
Int. Cl.[3] G05D *11/03*
U.S. Cl. 137—88 8 Claims



1. An electronic breathing mixture control system comprising:

a first gas source;

a gas mix chamber containing a multiple gas mixture including said first gas;

multiple gas sensors disposed within said gas mixture chamber wherein said gas sensors are responsive to said first gas;

amplifiers coupled to each of said first gas sensors for producing signals proportional to the partial pressure of said first gas within said gas mix chamber;

comparator means coupled to said amplifiers for determining whether said amplified sensor signals fall within predetermined ranges corresponding to ranges of partial pressure of said first gas;

first logic means coupled to said comparator means for producing a first set of logic signals, wherein a selected one of said first logic signals is generated whenever a predetermined number of said amplified sensor signals simultaneously fall within a selected one of said ranges;

second logic means coupled to said comparator means for producing a second logic signal whenever any one of said amplified sensor signals falls within a range different from that of any one of said other amplified sensor signals by more than a selected number of ranges;

third logic means coupled to said first and said second logic means for producing a third set of logic signals wherein said third set of logic signals is responsive to selected combinations of said first and said second sets of logic signals, thereby determining whether a valid logic condition exists and, if so, which of said predetermined ranges of partial pressure of said first gas is present in said gas mix chamber;

indicator means coupled to said third logic means for indicating the status thereof; and

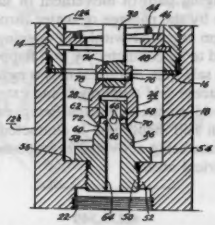
valve means coupled to said third logic means for allowing communication between said first gas source and said gas mix chamber, whereby said valve means is opened and closed responsive to whether said first gas partial pressure is less than or greater than a predetermined level.

4,236,547

SELF-CLEANING VALVE PLUG AND SEAT ASSEMBLY

Bohdan A. Harasewych, Flourtown, Pa., assignor to Ogontz Controls Company, Willow Grove, Pa.

Filed Apr. 9, 1979, Ser. No. 28,075
Int. Cl.[3] F16K *29/00, 31/00*
U.S. Cl. 137—243 9 Claims



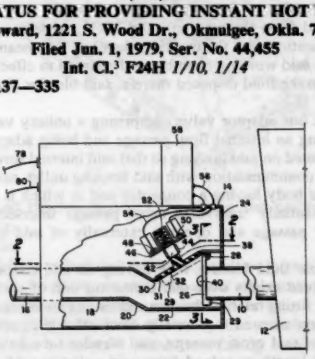
1. A self-cleaning valve plug and seat assembly comprising a seat member and a valve plug, said seat member comprising a cylindrical skirt portion and a substantially frusto-conical seating surface coaxial with said skirt portion and converging toward and intersecting said skirt portion at an obtuse angle, a fluid passage extending through said seat member, and at least one port in said skirt portion connecting with said fluid passage; said valve plug comprising a cylindrical bore extending partway thereinto to permit sliding telescoping movement of said valve plug along the exterior of said seat member skirt portion, said plug having a circular cutting edge adjacent the open end of said bore, said cutting edge being formed by a surface of revolution and having an axis concentric with the axis of said plug bore and converging toward and intersecting said plug bore at an acute angle, and means for moving said plug toward and away from said seat member seating surface, said plug uncovering said valve member port in the open position of said assembly, said plug covering said port and said cutting edge engaging said seating surface in fluid-tight sealing relation in the closed position of said assembly.

4,236,548

APPARATUS FOR PROVIDING INSTANT HOT WATER

E. W. Howard, 1221 S. Wood Dr., Okmulgee, Okla. 74447

Filed Jun. 1, 1979, Ser. No. 44,455
Int. Cl.[3] F24H *1/10, 1/14*
U.S. Cl. 137—335 3 Claims



1. A control system for providing instant hot water at a hot water tap comprising a control unit adapted to be interposed in the fluid line between the source of water supply and the hot water tap and a heating unit interposed in said fluid line between the control unit and the hot water tap; said heating unit comprising a closed heating chamber, a pipe arranged within said chamber and constituting a portion of the fluid line between the control unit and the hot water tap, and heating means within said heating chamber for heating said pipe; said

control unit comprising a fluid passageway therethrough constituting a portion of the fluid line between the source of supply and the heating unit, a flapper chamber formed in said passageway, an inlet pipe from said source of supply having an inlet end disposed within said flapper chamber, a flapper pivotally mounted in said flapper chamber, and disposed over the inlet end of said inlet pipe when no water is passing through said control unit, a flat surface on said flapper chamber disposed within the swinging path of movement of said flapper when caused to move by the passage of water through said control unit, a diaphragm received within an opening in said flat surface and adapted to be contacted by said flapper when water is passing through said unit, electrical means mounted within said control unit adjacent said diaphragm and external of said flapper chamber, said electrical means being energized by said diaphragm when said diaphragm is contacted by said flapper, said heating means being activated in response to the energizing of said electrical means.

4,236,549

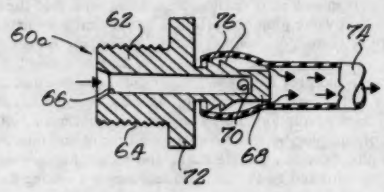
BLEEDER KIT FOR BLEEDING A MASTER CYLINDER

Donald F. Salzmann, Northbrook, Ill., assignor to Autoline Supply Company, Chicago, Ill.

Filed May 12, 1978, Ser. No. 905,184

Int. Cl.³ B60T *17/00*

U.S. Cl. 137—343 **7 Claims**



1. A bleeder kit for use in bleeding a master cylinder of the type employed in a vehicle brake system, the master cylinder including a housing defining a fluid reservoir accessible from externally of the housing and adapted to contain a quantity of brake fluid which may have gas bubbles entrained therein, said housing further defining a working chamber adapted to receive fluid from the reservoir and having at least one outlet communicating with the working chamber, and means cooperable with said working chamber and adapted to effect pressurizing of brake fluid disposed therein, said bleeder kit comprising,

at least one adaptor valve comprising a unitary valve body having an internal flow passage and being adapted to be mounted on said housing so that said internal flow passage is in communication with said housing outlet, said unitary valve body having a connector end in which is formed a substantially transverse cross passage intersecting said flow passage and opening externally of said connector end,

a flexible fluid bleeder tube having an end adapted to be received axially over said connector end of said valve in snug fitting relation thereon and having an internal configuration adapted to normally close off said external opening of said cross passage, said bleeder tube having sufficient length to extend from said valve to said reservoir when said valve is mounted on said housing,

bracket means adapted for mounting on said housing and having means facilitating cooperation with said bleeder tube to position an end thereof opposite said valve so as to discharge fluid from said tube into said reservoir,

said valve when mounted on said housing and having said end of said bleeder tube received over said connector end being cooperative with said tube to facilitate flow of brake fluid from said working chamber through said tube into said reservoir upon actuation of said pressurizing means and being adapted to prevent fluid flow in an opposite direction through said external opening in said connector end of said valve, repeated pressurizing of said working chamber being operative to unidirectionally circulate said brake fluid from said working chamber to said reservoir during which gas bubbles entrained in the brake fluid are forced out of the fluid.

4,236,550

ELASTIC MUSLIN BANDAGE

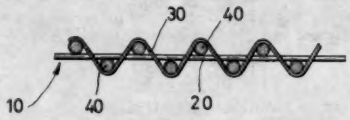
Franz Braun, and Ewald Schäfer, both of Wolfstein, Fed. Rep. of Germany, assignors to Karl Otto Braun KG, Wolfstein, Fed. Rep. of Germany

Filed Feb. 1, 1978, Ser. No. 874,158

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1977, 2706787

Int. Cl.³ D03D *15/08*

U.S. Cl. 139—421 **18 Claims**



1. In an elastic muslin bandage consisting of warp threads and weft threads, the improvement comprising that said warp threads consist essentially of first threads and second threads, that said first threads consist essentially of elastic fibers, that said second threads consist essentially of non-elastic fibers and that said weft threads consist essentially of non-elastic fibers, said warp threads being arranged with said first and second threads in a recurrent sequence in accordance with the following:

(a) first threads consisting of at least one of textured polyfilic polyamide fiber, spun polyurethane fiber and rubber fiber;

(b) second threads consisting of at least one of a spun crepe fiber having an S-twisting direction and a size Nm 34/1, Nm 40/1, Nm 50/1, Nm 60/1, Nm 70/1, and a fine elastic twisted crepe fiber of size Nm 60/2, Nm 70/2, Nm 100/2, Nm 140/2, said spun crepe fiber and said fine elastic twisted crepe fiber consisting of at least one of the fibers cotton or cellulose;

(c) first threads consisting of at least one of textured polyfilic polyamide fiber, spun polyurethane fiber and rubber fiber;

(d) second threads consisting of a twisted crepe fiber having a Z-twisting direction.

4,236,551

METHOD OF AND APPARATUS FOR COOLING ROLLED WIRE

Walter Worgt; Gerhard Pechau; Ewald Wyzgol, and Manfred Franz, all of Magdeburg, German Democratic Rep., assignors to VEB Schwermaschinenbau-Kombinat Ernst Thälmann Magdeburg, Magdeburg, German Democratic Rep.

Filed Sep. 29, 1978, Ser. No. 947,076

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2120163

Int. Cl.³ B21F *21/00*; C21D *9/52, 9/56*

U.S. Cl. 140—1 **11 Claims**

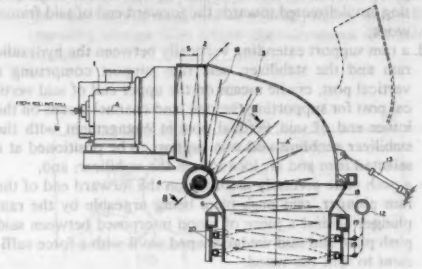
1. An apparatus for treating a wire immediately after hot-formation thereof, said apparatus comprising:

an upright cooling tube having an upper end and a lower end;

coiling means for forming said wire into a continuously advancing helix having a succession of turns;

guide means between said coiling means and said upper end for feeding said continuously advancing helix into said upper end and thereby causing said helix to drop vertically in said tube;

cooling means in said tube for spraying said helix therein with a fluid cooling medium and thereby cooling said helix; and



conveyor means at said lower end for receiving the cooled helix and conducting same away from said lower end.

4,236,552

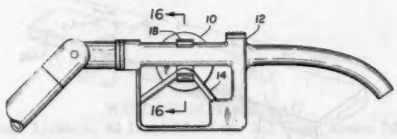
GASOLINE PUMP CLIP CAP

Eric R. Rayboy, 1051-G NW. 80 Ter., Margate, Fla. 33063

Filed May 3, 1979, Ser. No. 35,713

Int. Cl.³ B65B *3/04*; G05G *5/06*

U.S. Cl. 141—98 **5 Claims**



1. A gas pump clip cap comprising:

(a) A gas cap of standard configuration, said gas cap having a U-shaped channel or flange mounted on its rear or handle portion; and

(b) a C-shaped clip mounted onto said flange; whereby said gas pump clip cap can function to both seal the filler pipe of an automobile gas tank and, when removed from said filler pipe, said clip of said gas pump clip cap can function to maintain the handle of a gasoline pump in an operable position.

4,236,553

BEVERAGE PORTION CONTROLLER

Arthur M. Reichenberger, 1916 N. 21st Pl., Phoenix, Ariz. 85006

Filed Jul. 3, 1979, Ser. No. 54,469

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—198 **10 Claims**

1. In a beverage dispenser including:

a nozzle for discharging liquid,

a cup supporting means positioned below said nozzle for receiving a cup having a rim;

a solenoid controlled valve for controlling the discharge of said liquid from said nozzle;

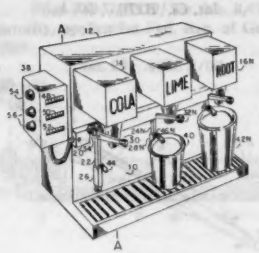
probe means engageable with the rim of said cup for making electrical contact with said liquid dispensed into said cup; and

control circuit means electrically connecting said probe means and said solenoid control valve for actuating said valve to stop the dispensing of said liquid into said cup when said liquid attains a pre-determined level in said cup;

improvements therein for automatically positioning said conductive probe means to accommodate cups of varying heights, said improvements comprising:

a probe and switch support housing carrying said probe means;

said probe means being slideably mounted for reciprocal vertical movement; and



switch means, fro activating said solenoid control valve to initiate the dispensing of said liquid into said cup.

4,236,554

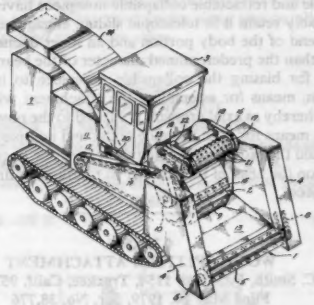
LAND CLEARING MACHINE

Thomas W. Nicholson, Bellevue, Wash., assignor to Nicholson Manufacturing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 869,267, Jan. 13, 1978, abandoned. This application Jul. 21, 1978, Ser. No. 926,760

Int. Cl.³ A01G *23/08*; B02C *18/22*

U.S. Cl. 144—34 R **25 Claims**



1. A land clearing machine for felling and chipping trees comprising:

a vehicle;

a tree-felling cutterhead carried by and projecting forward from said vehicle and rotatable about a generally horizontal axis extending transversely of said vehicle;

a tree-chipping cutterhead carried by said vehicle a substantial distance rearward of said tree-falling cutterhead and rotatable about a generally horizontal axis extending transversely of said vehicle;

a tree-supporting generally horizontal apron mounted on said vehicle and extending fore-and-aft between said tree-felling cutterhead and said tree-chipping cutterhead;

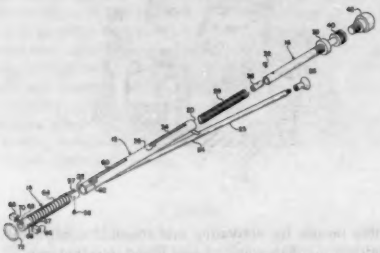
tree-feeding means carried by said vehicle generally above said apron for feeding trees rearward along said apron from said tree-felling cutterhead to said tree-chipping cutterhead; and

separate drive means for rotating said respective cutterheads about their axes independent of each other.

4,236,555
STAND-UP SCREWGUN

George G. Dewey, Prospect Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 23, 1979, Ser. No. 59,867
Int. Cl.[3] B27B 7/00
U.S. Cl. 81-431 8 Claims

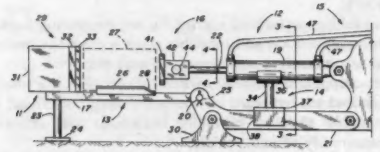


1. An attachment for a rotary power tool which permits the installation of threaded fasteners from a standing position said attachment comprising a longitudinal body portion consisting of an open tubular section which has a tubular bearing member situated between an upper and a lower end; a converging feed tube for delivering fasteners successively to the lower end of said body portion; an extendable and retractable drive rod having a fastener-engaging driver portion, an enlarged bearing surface portion with a predetermined outer diameter, and a rotational drive receiving portion; a drive rod slide collar which surrounds a portion of the drive rod and is retained for extendable and retractable telescopic sliding movement therewith within the upper end of the body portion; means for biasing the slide collar to its extended position; an axially extendable and retractable collapsible nosepiece having means to removably retain it in telescopic sliding engagement with the lower end of the body portion and an inner diameter slightly larger than the predetermined diameter of the bearing surface; means for biasing the collapsible nosepiece to its extended position; means for assembling the attachment with a power tool; whereby as axial pressure is applied to the power tool, the biasing means for both the slide collar and nosepiece are overcome and the fastener-engaging driver portion engages a drive means on the head of the fastener to rotationally drive it into a workpiece.

4,236,556
WOOD SPLITTER ATTACHMENT

Robin C. Smith, P.O. Box 1154, Truckee, Calif. 95734

Filed May 14, 1979, Ser. No. 38,776
Int. Cl.[3] B27L 7/00
U.S. Cl. 144—193 A 8 Claims



1. A wood splitter attachment for use with a backhoe or the like having a stabilizer and a stabilizer-positioning hydraulic ram normally pivotally interconnected by a ram to stabilizer pivot pin, said attachment comprising:

a. an elongated fore and aft framework;

b. means for attaching the forward end of said framework to the stabilizer after the stabilizer and the ram are disconnected by removal of the pivot pin, said attaching means being effective to position said framework and the stabilizer in fore and aft alignment;

c. a wedge-shaped wood splitting anvil mounted on the after portion of said framework with the tip of said wood splitting anvil directed towards the forward end of said framework;

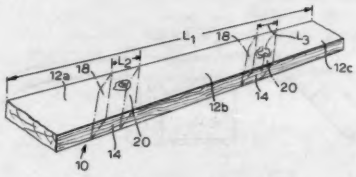
d. a ram support extending vertically between the hydraulic ram and the stabilizer, said ram support comprising a vertical post, cradle means on the upper end of said vertical post for supporting the ram, and channel means on the lower end of said vertical post in engagement with the stabilizer enabling said ram support to be positioned at a selected fore and aft location on the stabilizer; and,

e. a push plate pivotally mounted on the forward end of the ram plunger, said push plate being urgeable by the ram plunger against a piece of wood interposed between said push plate and said wedge-shaped anvil with a force sufficient to split the wood.

4,236,557
METHOD FOR MANUFACTURING WOOD MOULDINGS

Mark O. Marquardt, Amherst, Canada, assignor to Conduit-Amherst Limited, Mississauga, Canada

Filed Feb. 22, 1979, Ser. No. 13,897
Int. Cl.[3] B27D 1/10; B27M 3/08
U.S. Cl. 144—315 R 2 Claims



1. A method of converting a longitudinally elongated moulding rip having a portion containing a flaw such as a knot which is unacceptable in clear grade mouldings, into a substantially flawless premium length clear grade moulding, the rip having first and second flawless portions of substantially matching grain and a length less than a premium length, on either side of the portion containing the flaw, comprising the steps of;

(a) cutting said rip transversely of its longitudinally elongated extent at both ends of the portion containing the flaw to provide smooth complementary first and second scarf joint faces on the ends of the first and second flawless portions respectively disposed adjacent the portion containing the flaw,

(b) removing the portion containing the flaw from between said first and second scarf joint faces,

(c) bonding said first and second scarf joint faces of said first and second flawless portions to one another to form a scarf joint connecting said first and second flawless portions to form a rip having a premium length,

(d) working the rip to produce a profiled moulding having a substantially flawless clear grade surface finish.

4,236,558
WOODWORKING TECHNIQUE FOR FORMING CORNERS

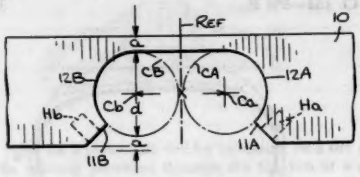
Irving Sabo, Box 32, Green Farms, Conn. 06436

Filed May 8, 1979, Ser. No. 37,048
Int. Cl.[3] B27H 1/00
U.S. Cl. 144—318 8 Claims

1. A woodworking technique for forming angled corners in straight pieces of wood, the technique comprising the steps of:

A. producing a cut-out on the inner side of the piece which

is symmetrical with respect to a transverse reference line and is constituted by a converging entry zone whose opposing flat sides have complementary angles, each equal to one-half the angle of the corner to be produced, the entry zone leading into an oblong interior zone whose opposing arcuate sides follow the curvatures of a pair of circles;



B. steaming the wood section of the piece which bridges the arcuate sides to render it yieldable; and

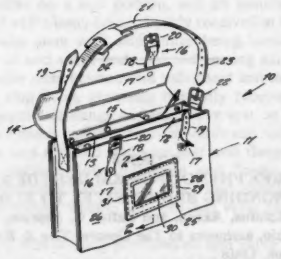
C. bending the piece to cause the arcuate sides to meet and the flat sides to abut at the reference line to define a circular leg-receiving socket surrounded by wood.

4,236,559

WINDOW SCHOOL BAG

Ellard Archbold, 82 Hendricks Ave., 2nd Floor, Staten Island, N.Y. 10301

Filed Aug. 6, 1979, Ser. No. 63,992
Int. Cl.³ A45C 3/02
U.S. Cl. 150—1.6 1 Claim



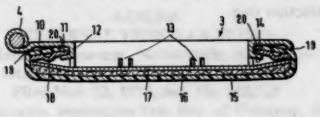
1. A window school bag, comprising in combination, a bag member, a partition forming a plurality of compartments inside said bag member, a cover snapped over a top opening of said bag member, a shoulder strap, fitted with adjustable pad, being attached across opposite ends of said bag member, and a window on a front side of said bag member for displaying a bus pass and other identification cards; said window comprising a frame fitted with a transparent plastic pane, said frame being stitched on an outer surface of said bag member front side, and a horizontal slot through said front side for access of said card into a pocket formed between said front side and said pane; said slot being near an upper end of said pocket, and an upper horizontal edge of said slot being serrated with depending teeth so as to block accidental entry of said card from said pocket and outwardly through said slot.

4,236,560

FRAME FOR A CASE, WALLET OR SIMILAR DEVICE

Axel Reischauer, Kirschweiler, Fed. Rep. of Germany, assignor to Gold- und Silber- Scheideanstalt Oberstein Franz Reischauer, Idar-Oberstein, Fed. Rep. of Germany

Filed Feb. 2, 1979, Ser. No. 8,473
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805564
Int. Cl.³ A45C 1/00
U.S. Cl. 150—46 3 Claims



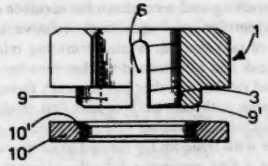
1. A frame for a case, wallet or similar device, comprising a main frame member (10) including a main leg, a radially outer rim (19) extending away from said main leg substantially at a right angle relative to said main leg, a radially inner rim (12) also extending away from said main leg substantially at a right angle and in the same direction as said radially outer rim, said radially inner rim (12) being longer than said radially outer rim (19), securing means (14) in said radially inner rim arranged to be bent radially outwardly, substantially flat insert means (11) fitting around said radially inner rim (12) and having a reinforcing groove (18) therein, cover means having an edge wrapped to substantially overlay one surface of said flat insert means, said one surface facing toward said main leg and toward said radially outer rim of said main frame member, said securing means (14) being so dimensioned that when said securing means are bent radially outwardly against said insert means, said insert means pinch said edge of said cover means against said main leg and against said radially outer rim thereby pinching the edge of the cover means along two parallel lines running all around said cover edge.

4,236,561

SELF-LOCKING NUT

Giulio Monticelli, Via Savona, 134 Milan, Italy

Continuation of Ser. No. 848,038, Nov. 3, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,776
Claims priority, application Italy, Nov. 12, 1976, 29269 A/76
Int. Cl.² F16B 39/36
U.S. Cl. 151—19 R 1 Claim



1. A self-locking nut adapted to receive a male threaded member comprising a body having a polygonal outer surface, a circular neck portion extending downwardly from said body, said circular neck portion having a diameter less than the distance between opposite faces of the polygonal body outer surface whereby an annular offset is formed where the circular neck portion meets the body, an axial hole extending vertically through the body and the circular neck portion, the wall of said axial hole being threaded throughout its axial length, at least one vertical longitudinal slot being formed in the body and neck portion, said slot extending completely through the vertical side of the body and neck portion to connect with the axial hole, and a resilient contraction ring engaging the neck portion to cause the size of the threaded hole to decrease to

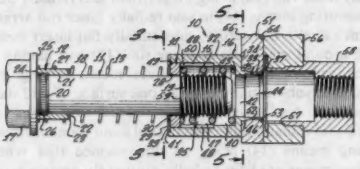
thereby provide increased friction between the threads on the mating parts to provide a desired locking action, the peripheral development for the inner edge of the opening in the contraction ring being larger than the outer peripheral development of the circular neck, the interference between the circular neck and the inner edge of the contraction ring being in the range of 0.2–0.5% of the major diameter of the threading, the thickness of said contraction ring being slightly greater than the neck length, said contraction ring having a non-circular internal surface that contacts said circular neck at spaced regions on said circular neck, thereby to promote resilient deformation of said contraction ring.

4,236,562

RATCHET BOLT ASSEMBLY

Jorge W. Molina, Torrance, Calif., assignor to Deutsch Fastener Corp., El Segundo, Calif.

Filed Dec. 11, 1978, Ser. No. 968,492
Int. Cl.³ F16B *41/00*
U.S. Cl. 151—69 **12 Claims**



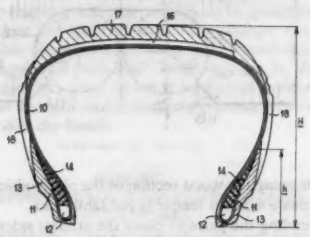
1. A self-locking fastener device comprising
a bolt having
a head,
a shank extending from said head,
and threads on the outer end of said shank,
a first ratchet member adjacent said head,
said first ratchet member being rotatable with said shank and having teeth facing toward said outer end of said shank,
a retaining member having means for attachment to a workpiece,
a second ratchet member,
said second ratchet member having an opening receiving said shank inwardly of said threads,
means for retaining said second ratchet member on said shank with freedom for axial movement relative to said shank inwardly of said threads, while permitting relative rotation of said shank and said second ratchet member,
said second ratchet member having teeth facing toward and engageable with said teeth of said first ratchet member,
said second ratchet member being retained by said retaining member with freedom for limited axial movement thereof between a first position relatively adjacent said head of said bolt and a second position relatively remote therefrom, while being prevented from substantial rotation relative to said retaining member,
a first spring biasing said second ratchet member toward said first position,
and a second spring engaging said bolt and exerting a force biasing said bolt toward a retracted position and said second ratchet member toward said second position,
said first spring being stronger than said second spring whereby said second ratchet member is maintained in said first position upon axial advancement of said bolt until said first ratchet member engages said second ratchet member, and thereafter said second ratchet member is moved by said first ratchet member toward said second position.

4,236,563

PNEUMATIC TIRE WITH ANISOTROPIC FILLER STRIP

Daniel Moers, Montpellier, and Michel Balland, Rosny-sous-Bois, both of France, assignors to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France

Filed Jul. 10, 1978, Ser. No. 923,211
Claims priority, application France, Jul. 11, 1977, 77 21399
Int. Cl.³ B60C *15/06, 9/08*
U.S. Cl. 152—354 R **3 Claims**



1. A pneumatic tire having:
(a) a radial carcass provided with a reinforced crown,
(b) a pair of beads each including at least one bead-wire, and
(c) a filler strip located between each said bead-wire and said crown, and wherein each said filler strip has a cross-section which tapers in a direction towards said crown and which is made from a rubbery mixture reinforced with short fibres, said mixture consisting of 10 to 75 parts by weight of said fibres to 100 parts by weight of said rubber and wherein each said filler strip extends in a direction of the side wall associated therewith to a height of between 0.2 and 0.5 times the cross-sectional height of the tire, the fibres reinforcing the mixture of the strip being, at least in part, orientated in the radial direction of the tire whereby the mixture of the strip has a ratio of anisotropy at least equal to 2:1.

4,236,564

RUBBER-FREE PHENOL-FORMALDEHYDE ADHESIVE FOR BONDING BRIGHT STEEL TO RUBBER

Edward F. Kalafus, Akron, and Satish C. Sharma, Mogadore, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

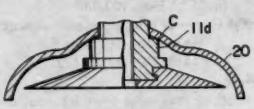
Filed May 10, 1979, Ser. No. 37,604
Int. Cl.³ B60C *1/00;* C08L *61/06;* B29H *17/00*
U.S. Cl. 152—359 **1 Claim**

1. In a tire containing reinforcing elements having a bright steel surface bonded to a vulcanized rubber by a rubber-free adhesive composition wherein the vulcanized rubber contains from a small but effective amount to improve adhesion to 30 phr of a phenolic resin adhesion promoter and from a small but effective amount to improve adhesion to 60 phr of silica, the improvement characterized by the adhesive comprising a cured phenolic resin formed by the reaction of a phenol and formaldehyde wherein the resin in its uncured state is selected from the class consisting of heat reactive phenolic resin, and heat reactive phenolic resin in combination with non-heat reactive phenolic resin, wherein the ratio of the phenol to formaldehyde in the resin is from 1:1 to 1:6.

4,236,565
VALVE FOR PNEUMATIC TIRES

Kiyoshi Iwabuchi, Tokyo, Japan, assignor to Dai-Ich Seiko Co., Ltd., Kawaguchi, Japan

Filed Aug. 11, 1977, Ser. No. 823,738
Claims priority, application Japan, Oct. 16, 1976, 51-139374
Int. Cl.[2] B60C *23/10*
U.S. Cl. 152—427 1 Claim



1. In a valve for a pneumatic tire for mounting on a tire rim through an opening provided through the tire rim at a site where the tire rim is circular and generally convex radially outwards as viewed in longitudinal cross-section and where the tire rim is generally concave radially outwards as viewed in transverse radial cross-section;

wherein the valve includes:

a tubular stem having a bore with a generally coaxially annular constriction therein providing a valve seat;

an annular sealing disk generally coaxially secured on the tubular stem to radiate outwardly therefrom at one end thereof so that radially inside the rim the tubular stem may be sealingly secured to an air-containing body, with an outer end portion of the tubular stem projecting out through said tire rim opening;

a first radial enlargement and a second radial enlargement being provided in tandem on said stem, the first one being disposed nearer said annular sealing disk and being designed to abut the rim at least generally perimetrically of said opening, and the second one being threadably mounted on the exterior of the stem and being designed to be threaded towards said first radial enlargement after the tubular stem outer end portion has been projected out through said rim opening in order to trap the rim between said first and second radial enlargements and thus secured the valve to the rim;

a valve body including a flange portion provided as an enlargement on a rod portion, and an annular packing ring, said valve body being slidably received in the bore of said tubular stem with said flange being located axially inwards of said valve seat, said rod passing axially out of said tubular stem beyond said valve seat and said annular packing ring being generally coaxially received on said rod between said flange and said valve seat, so that when said valve rod is pushed axially inwards said valve is open between said rod and said seat past said flange and said annular packing ring, but when said flange is pushed axially outwards, said flange urges said annular packing ring into sealing relation between said valve seat and said flange;

enlargement means being provided on said valve rod axially beyond said tubular valve stem, which is engageable with said tubular valve stem to limit axially inward travel of said valve rod by abutment of said enlargement means with said tubular valve stem,

the improvement wherein:

said tubular valve stem is an integrally molded member made of synthetic plastics material said bore of which is provided with a non-circular transverse cross-sectional shape of at least generally constant size in at least a portion thereof extending axially inwards of said valve seat so as to provide at least one radially inwardly opening, axially extending relatively grooved site angularly adjacently alternating with at least one relatively radially inwardly protuding site; and

said flange of said valve body having a radially outerperipheral surface of a non-circular section that is at least generally complementary to said shape of said stem bore portion and at least one relative protuberance receiving said relatively groove site of said stem bore portion, the valve body thus being intercalated with the tubular valve stem for non-rotative axial sliding with respect thereto;

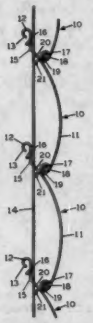
said first radial enlargement on said tubular valve stem being integrally provided as a stepped portion thereon;

said stepped portion of said tubular valve stem being delineated axially outwardly by an annular shoulder which at least generally matches said circular convexity and radially outward concavity of the rim at said site.

4,236,566
EXTERNAL VENETIAN BLIND

Erich E. Hensel, Wassenaar, Netherlands, assignor to Hunter Douglas International N.V., Netherlands Antilles

Filed Nov. 22, 1978, Ser. No. 963,126
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1977, 2752388
Int. Cl.[3] E06B *3/48, 9/00*
U.S. Cl. 160—130 7 Claims



1. An external venetian blind having a plurality of slats and at least two flexible lifting elements with each lifting element passing freely through an opening in each slat, said blind being of the type that in its closed position the slats partially overlap; characterized in that said slats include a main portion and an offset edge portion, said offset edge portion including a substantially planar portion adjacent said main portion, said offset edge portion extending upwardly from the main portion in the closed position of the blind, said offset edge portion being overlapped by the main portion of the slat thereabove in the closed position of the blind, and said openings for said lifting elements being located at least in part in the main portion of said slats.

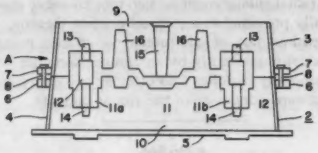
4,236,567
FASTENING MEMBER FOR SECURING THE SLATS OF A VENETIAN BLIND TO A SUPPORT ELEMENT AND METHOD FOR ASSEMBLY

Kurt H. Frentzel, Zevenhoven, Netherlands, assignor to Hunter Douglas International N.V., Netherlands Antilles

Filed Jun. 2, 1978, Ser. No. 911,824
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1977, 2725600
Int. Cl.[3] E06B *9/38*
U.S. Cl. 160—178 R 9 Claims

1. In a fastening member for fastening the slats of a venetian blind to a flexible support member which slats have openings therein for receipt of said fastening member, the fastening member comprising a portion extending through an opening of a slat the improvement comprising said fastening member being generally "U" shaped in configuration, the outer ends of the legs of said "U" having outwardly extending abutments, the overall dimension of said fastening member in a direction

measured from the outer terminus of one abutment to the outer terminus of the other abutment being greater than the opening in said slat, all cross-sections of said fastening member taken at



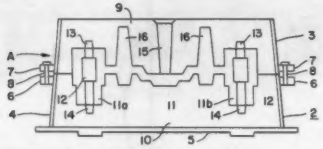
right angles to said direction being of such shape and size as to permit said fastening member to be passed in said direction entirely through the opening in said slat.

4,236,568

METHOD OF CASTING STEEL AND IRON ALLOYS WITH PRECISION CRISTOBALITE CORES

David L. Larson, Chagrin Falls, Ohio, assignor to Sherwood Refractories, Inc., Cleveland, Ohio

Filed Dec. 4, 1978, Ser. No. 966,070
Int. Cl.³ B22C *1/00*
U.S. Cl. 164—41 **16 Claims**



1. A foundry sand casting process for casting steel and iron alloys comprising shaping a flowable refractory mixture comprising refractory particles, a mineralizer and an organic binder to form a green silica core with a longitudinal hole therein, said refractory particles comprising at least 50 percent by weight of refractory grains with a particle size from 50 to 150 microns and at least 20 percent by weight of fine vitreous silica particles with a particle size up to 20 microns, including at least 15 percent by weight of silica particles with a particle size less than 10 microns, the mineralizer providing devitrifying metallic ions in an amount equal to at least 0.03 percent of the weight of the refractory particles, said core comprising a hollow silica rod with a wall thickness not in excess of 1 centimeter and less than the thickness of the surrounding portions of the metal casting to be cast and with a length at least 10 times said wall thickness; heating the green silica core to remove combustibles and firing it to cause extensive devitrification of the silica particles in the bond region between the refractory grains and to form a rigid fired core containing at least 90 percent by weight of silica including at least 15 percent by weight of insituformed crystalline silica, said fired core having a porosity of at least 25 volume percent, a modulus of rupture of at least 80 kilograms per square centimeter at 25° C., and a modulus of rupture of at least 60 kilograms per square centimeter at 1500° C., the silica grains of said fired core comprising at least 80 percent by weight of vitreous silica and at least 5 percent by weight of cristobalite concentrated near the outer surface portions of the grains; cooling the fired core below 200° C. and below the alpha-beta inversion temperature; locating the cool fired silica core within the mold cavity of a sand mold; causing a molten ferrous alloy to flow into the mold cavity and around the cool fired core; causing gases from the hollow core to move radially inwardly as the core is heated by contact with the molten alloy; and allowing the cast alloy to cool in said sand mold and to solidify around the silica core in said cavity.

4,236,569

FOUNDRY PROCESSES AND COMPOSITIONS

David Epstein, and John Bugg, both of London, England, assignors to The White Sea & Baltic Company Limited, London, England

Continuation-in-part of Ser. No. 761,756, Jan. 24, 1977, Pat. No. 4,111,253, which is a continuation-in-part of Ser. No. 282,633, Aug. 21, 1972, abandoned. This application May 19, 1978, Ser. No. 907,438
The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.
Int. Cl.³ B22C *1/22*
U.S. Cl. 164—43 **12 Claims**

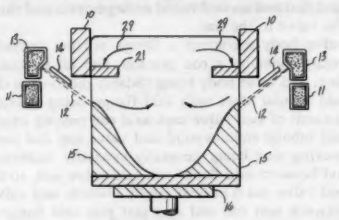
1. In a method of making a foundry mould or core which comprises forming a fluid mixture that is stable against collapse before setting and that comprises a foundry sand and a foamed aqueous phase comprising resin condensate, surfactant foaming agent and an acid curing agent, pouring the fluid mixture into a mould or core box which is immobile and allowing the mixture to set without vibration of the mould or core box or ramming of the fluid mixture or other consolidation techniques; the improvement which comprises the steps of preparing the fluid mixture by blending the sand and foamed aqueous phase comprising the resin condensate and foaming agent and thereafter adding and mixing the acid curing agent into said foamed fluid mixture wherein the foaming agent is selected from the group consisting of fatty amido alkyl betaines, substituted imidazolines, and lauryl ether sulphates.

4,236,570

INGOT SHAPE CONTROL BY DYNAMIC HEAD IN ELECTROMAGNETIC CASTING

Gerhart K. Gaule, Elberon, N.J.; John C. Yarwood, Madison, and Derek E. Tyler, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 8, 1979, Ser. No. 1,730
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—49 **22 Claims**



1. In an apparatus for electromagnetic forming of molten metals or alloys into a casting of desired shape having at least one portion of small radius of curvature comprising:

means for providing said molten metals or alloys;

means comprising a hot-top for receiving said molten metals or alloys, said hot-top including at least one corner and having approximately the same cross-section as said casting;

means comprising an electromagnetic casting station for forming said molten metals or alloys as they emerge from said hot-top into said casting; the improvement comprising:

means associated with said hot-top adapted for increasing the dynamic pressure of said molten metals or alloys at said hot-top corner by preferentially directing molten metal or alloy flow toward said hot-top corner.

21. In a process for electromagnetic forming of molten metals or alloys into a casting of desired shape having at least one portion of small radius of curvature comprising:

providing an electromagnetic casting station;

pouring said molten metal or alloy into said electromagnetic casting station;

forming said molten metal or alloy in said electromagnetic casting station to form said casting; the improvement comprising:

increasing the dynamic pressure of said molten metals or alloys at said portion of small radius of curvature by preferentially directing said molten metal or alloy flow toward said portion of small radius of curvature as said molten metal or alloy is poured,

whereby a casting of desired shape having said at least one portion of small radius of curvature is formed.

4,236,571

PROCESS AND INSTALLATION FOR THE CONTINUOUS CASTING OF TUBULAR PRODUCTS

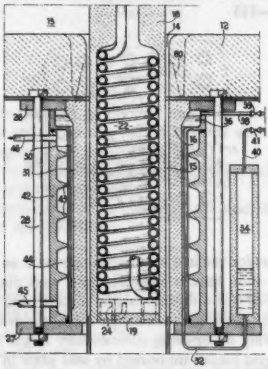
Michel Pierrel, and Rio Bellocci, both of Pont-a-Mousson, France, assignors to Pont-a-Mousson S.A., Nancy, France

Filed Jan. 23, 1979, Ser. No. 5,895

Claims priority, application France, Jan. 27, 1978, 78 02277

Int. Cl.³ B22D *11/00*

U.S. Cl. 164—85 **9 Claims**



1. A process for continuously casting a tubular product, and more particularly a thin-walled tube, from metal in an annular die space defined between a mould and a core of graphite and having an upper input end and a lower output end, comprising continuously supplying the die space with liquid metal under pressure, while maintaining the metal in contact with the core in a liquid state while facilitating the solidification of the metal in contact with the mould by cooling the whole length of the mould and heating the major part of the length of the core while maintaining cool an end portion of the core, which end portion is adjacent the output end of the die space and within the die space, thereby producing in the annular die space a solidification front of the liquid metal which extends from a region of the wall of the mould located in the vicinity of the input end of the die space and converges from said region of the wall of the mould toward the wall of the core and reaches a point of the core substantially at but no lower than the output end of the die space, contact of the core with the solidified part of the cast metal ceasing at substantially said output end of the die space.

3. An installation for continuously casting a tubular product and more particularly a thin-walled tube, from metal, comprising a mould and a core of graphite which define therebetween an annular die space having an input end and an output end, the core terminating substantially at said output end of the die space, a pouring basin located at the input end of the die space, and rollers located adjacent the output end of the die space for guiding and extracting the solidified tubular product issuing from the die space, means disposed around the mould and defining a jacket of liquid metal and means disposed around the jacket of liquid metal and defining a jacket of water, which jackets cool the mould, a heating device located inside the core and extending from a level adjacent the inlet end of the die space substantially throughout the length of the core but stopping short of the lower end of the core and short of said output end of the die space, and means disposed between the lower end of the heating device and the lower end of the core for maintaining the lower end portion of the core cool.

4,236,572

FLUID COOLED HEAT EXCHANGER SYSTEM

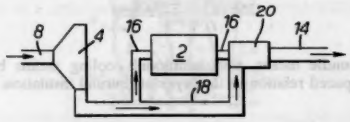
Horace G. Turner, Chandler's Ford, and Peter J. Taylor, Fareham, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Aug. 25, 1978, Ser. No. 936,786

Claims priority, application United Kingdom, Sep. 6, 1977, 37065/77

Int. Cl.³ G05D *15/00*

U.S. Cl. 165—38 **5 Claims**



1. A fluid cooled heat exchanger system comprising a heat exchanger, first conduit means connected to the heat exchanger, a pump for pumping a cooling fluid to the heat exchanger via the first conduit means, second conduit means for receiving fluid from the pump that is in excess of the heat exchanger requirements, and a valve which is so connected to the first and second conduit means that fluid that has passed through the heat exchanger via the first conduit means mixes in the valve with fluid that has by-passed the heat exchanger via the second conduit means, and the valve having a movable valve element which is moved off a valve seat by an amount dependent upon the flow of fluid in the second conduit means whereby the flow of fluid through the heat exchanger is maintained substantially constant, and in which the movable valve element is a spool with seats over a tubular inlet receiving the fluid from the heat exchanger.

4,236,573

HIGH-TEMPERATURE GAS EXIT FROM A PRE-STRESSED PRESSURE CONTAINER

Rolf Dörling, and Hans Hemshemeier, both of Gummersbach, Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,833

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1977, 2750968

Int. Cl.³ F28F *13/00*

U.S. Cl. 165—54 **2 Claims**

1. A high temperature gas exit conduit in the form of a pipe bundle means in combination with and extending through an opening in a wall of a pre-stressed, concrete pressure container, the combination comprising:

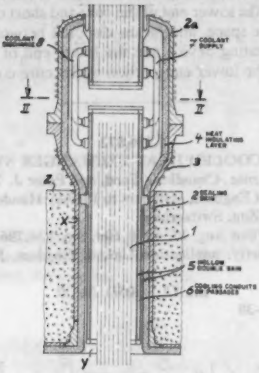
a surface defined by the opening, said surface extending through the thickness of the wall;

a casing surrounding the bundle and in sealing engagement with the entire surface of the opening, said casing having a portion extending past the wall;

cooling pipe means disposed both between the surface of the opening and the casing on that portion of the casing extending past the wall;

a layer of thermal insulation lining the entire inner surface of the casing and surrounding the pipe bundle, and

additional cooling means, independent of said cooling pipe means, and surrounding and in close proximity to the pipe



bundle means, said additional cooling means being in spaced relation to the layer of thermal insulation.

4,236,574

HEAT EXCHANGER, IN PARTICULAR FOR AN ATMOSPHERIC COOLING TOWER

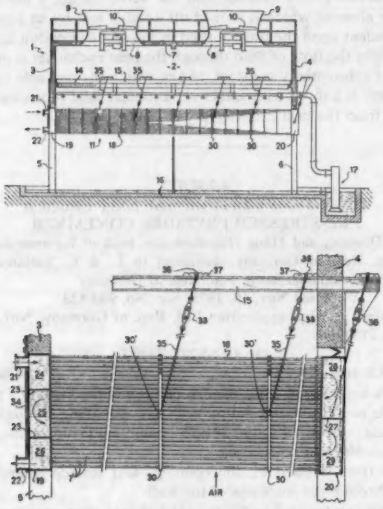
Jacques G. P. E. Bosne, Viroflay, France, assignor to Hamon-Sobelco, S.A., Brussels, Belgium

Filed Apr. 5, 1978, Ser. No. 893,788

Claims priority, application France, Oct. 7, 1977, 77 30221

Int. Cl.³ F28F *5/00, 9/00*

U.S. Cl. 165—67 **4 Claims**



1. A heat exchanger for exchanging heat between a first fluid and at least a second fluid, of the type comprising a horizontal battery of tubes of substantial length supported at intervals by spacer devices, said first fluid circulating through said tubes and said second fluid passing through said battery transversely with respect to the tubes, wherein said battery is suspended in at least a part of its length from suspension members to which said spacer devices are suspended, lower hooking points on the spacer devices for said suspension members, upper hooking points for said suspension members, said upper hooking points offset toward the other end of the battery relative to the vertical from lower hooking points on the spacer devices, wherein the tubes of said battery are rectilinear and the battery has included first and second header means one at each end of the tubes of said battery, said first header fixed on said support structure, and said battery including the second header is suspended freely in the remainder of its length, further wherein said suspension members are oriented in the longitudinal direction of the battery, and wherein said upper hooking points are offset toward said second header relative to the vertical from said lower hooking devices.

4,236,575

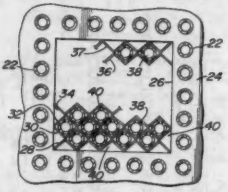
TUBE BUNDLE SUPPORT PLATE

LeRoy J. Raseley, Saylorsburg; Leslie L. Forster, Easton, both of Pa., and Edward F. Hay, Belvidere, N.J., assignors to Ecolaire Incorporated, Malvern, Pa.

Filed Sep. 24, 1979, Ser. No. 78,619

Int. Cl.³ F28B *1/02, 9/04;* F28F *9/00*

U.S. Cl. 165—113 **4 Claims**



1. Apparatus for use in a heat exchanger such as a condenser comprising a tube bundle support plate, said plate having a large number of holes therethrough, each of said holes being adapted to support a heat exchange tube, the central area of said plate having an opening substantially larger than one of said holes, a grid means supported by said plate in or adjacent said opening for supporting a plurality of heat exchange tubes intended to extend through said opening, said grid means being constructed so as to provide for a plurality of unobstructed gas flow passages through said opening.

4,236,576

HEAT EXCHANGERS WITH TUBE BUNDLES

Karl-Heinz Deuse, and Witold Drobka, both of Berlin, Fed. Rep. of Germany, assignors to Borsig GmbH, Berlin, Fed. Rep. of Germany

Filed Aug. 23, 1979, Ser. No. 68,886

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2840221

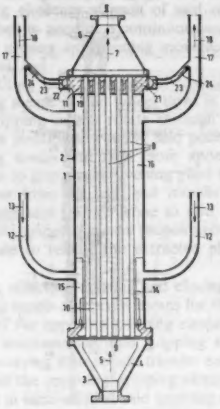
Int. Cl.³ F28F *9/02;* F28D *7/00*

U.S. Cl. 165—134 R **7 Claims**

1. A heat exchanger for heat-transfer between substances of high pressure difference, said heat exchanger including a shell; a region through which a pertaining cooler substance is conveyed; an inlet for said cooler substance; a bundle of tubes arranged in a cooler substance compartment; and riser conduit means operatively connectible to said shell and communicating with said compartment, with the substance to be cooled being passed through the pertaining tubes having a predetermined high temperature at the pertaining inlet end of said heat exchanger and a high temperature at the pertaining outlet end thereof; a tube bottom arranged at said heat exchanger inlet end, said tube bottom being of predetermined thickness; and a device including a supportgrating arranged in the vicinity of said tube bottom, operatively connectible to said shell, and extending at least nearly perpendicular to said tube bottom in

said region through which said cooler substance is conveyed, said heat exchanger comprising:

a tube top arranged at said heat exchanger outlet end, said tube top having an effective thickness which is greater than the pertaining predetermined thickness of said tube bottom;



an effective quantity of cooling channels arranged in said tube top and extending parallel to one another between pertaining tubes of said tube bundle;

recess means for communicating said cooler substance with said cooling channels; and

conduit means adapted to communicate said channels with said riser conduit means.

4,236,577

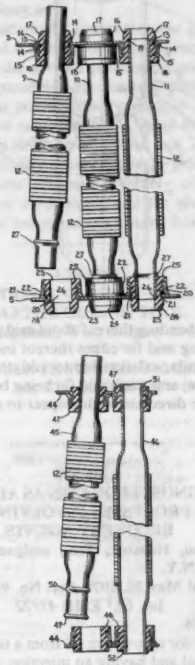
SEPARATELY REMOVABLE TUBES IN HEAVY DUTY HEAT EXCHANGER ASSEMBLIES

Gene T. Neudeck, Franklin, Wis., assignor to McQuay-Perfex, Inc., Milwaukee, Wis.

Filed Jun. 16, 1978, Ser. No. 916,000
Int. Cl.³ F28F *9/06*
U.S. Cl. 165—175 **2 Claims**

1. In a tube assembly for heavy duty heat exchangers having individually removable tubes, first and second support plates longitudinally spaced from each other and having a series of longitudinally aligned apertures therein, a hollow generally resilient sealing member securely disposed in each aperture in the support plates and the sealing members in the apertures in the first support plate having an inwardly facing abutment means projecting into the apertures in the sealing members and normally preventing movement of the tubes longitudinally outwardly of the sealing members, said abutment means being disposed slightly outwardly of the first support plate to permit stretching of each sealing member in an area free of the backing of the first support plate when an individual tube is pushed through a respective sealing member in a direction outwardly to free the opposite end of the tube from the second support plate and effect removal of the tube sideways of the heat exchanger for replacement, a plurality of individually removable heat exchanger tubes extending between the plates with the one end of each tube lodged against an abutment in the sealing members in the first support plate and with the opposite end of the tubes extending through the hollow sealing members in the second support plate, and second abutment means assembled with the sealing members of the second support plate to limit longitudinal movement of the tubes, said second abutment means being a combination of an internal inwardly facing annular ledge disposed in the inside diameter of each sealing member in the second plate and engaged by the respective end of a tube or tube assembly and a flange on the lower portion of each tube which engages the inner side of each sealing member of the second plate.

2. In a heavy duty heat exchanger having separately removable tubes, a pair of header plates longitudinally spaced from each other and having a plurality of longitudinal aligned apertures therein, a sealing member disposed in each aperture, fluid circulating tubes having their opposite end portions located in the oppositely disposed sealing members, flange means on each



tube engaging a sealing member to limit movement of the tubes in opposite longitudinal directions, and the flange means on each tube being a first flange engaging the outer end of a sealing member, and a second flange on the same end of the tube as the first named flange and longitudinally spaced from the first named flange and engaging the inner end of the said sealing member, the said flanges limiting movement of each tube in opposite longitudinal directions.

4,236,578

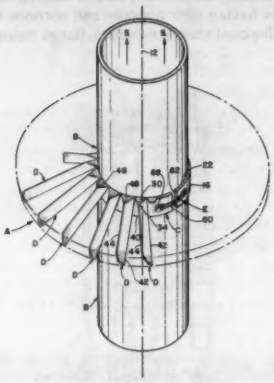
HEAT EXCHANGE ENHANCEMENT STRUCTURE

Frank Kreith, Boulder, Colo., and Richard C. Cornelison, Hiram, Ohio, assignors to Condar, Co., Hiram, Ohio

Filed May 4, 1978, Ser. No. 902,848
Int. Cl.³ F28F *1/20*
U.S. Cl. 165—181 **14 Claims**

1. A free convection type heat exchange enhancement structure comprising: an elongated flat mounting portion having opposite side edges; a plurality of fins integral with said mounting portion and extending outwardly from at least one of said side edges thereof; each said fin having a longitudinal fin axis, opposite fin faces, opposite fin edges and a substantially uniform width along its length; each said fin adjacent said one side edge of said mounting portion having a plurality of straight line bends therein about which each said fin is positioned extending transversely of the plane of said mounting portion

and turned about said axis through an angle substantially less than 90° for positioning said flat faces with the projected area thereof toward said opposite side edges of said mounting portion being substantially greater than the thickness of each said fin but substantially less than the width of each said fin; each



said fin, prior to bending thereof about said plurality of straight line bends, having said fin edges thereof inclined substantially out of perpendicular relationship to said one side edge of said mounting portion; and, each said fin being bent about each said bend in the same direction with respect to said mounting portion.

4,236,579

MODIFIED LIGNOSULFONATES AS ADDITIVES IN OIL RECOVERY PROCESSES INVOLVING CHEMICAL RECOVERY AGENTS

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed May 30, 1978, Ser. No. 910,926
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—274 **10 Claims**

1. In a method for recovering oil from a subterranean formation containing oil and having an injection well and a production well wherein an aqueous surfactant solution is injected into the injection well in order to drive the oil to the production well wherein it is produced the improvement which comprises:

injecting into the injection well in admixture with the surfactant lignosulfonates alkoxylated with an amount of ethylene oxide or propylene oxide effective to reduce the extent of adsorption of the surfactant on the formation matrix below that of lignosulfonate not alkoxylated and to render any insoluble lignosulfonates soluble in the aqueous surfactant solution wherein the alkoxylated lignosulfonate is present in an amount effective for reducing the extent of adsorption of the surfactant by the formation matrix.

4,236,580

METHOD AND APPARATUS FOR SONICALLY EXTRACTING OIL WELL LINERS

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Apr. 4, 1978, Ser. No. 893,339
Int. Cl.² E21B *31/00*
U.S. Cl. 166—301 **7 Claims**

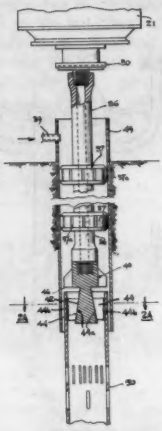
1. A method for removing an oil well liner lodged at the bottom of an oil well casing comprising the steps of:

lowering an elastic elongated column having a clamping tool at the bottom end thereof through said casing until said clamping tool is within said liner.

tightly clamping said tool to said liner,

coupling high level sonic energy to said column to cause longitudinal vibration thereof, said sonic energy being coupled through said tool to said liner,

while the sonic energy is being continually coupled to said liner, simultaneously and continuously applying varying



amounts of vertical bias force to said liner through said column, said bias force being changed from time to time, and

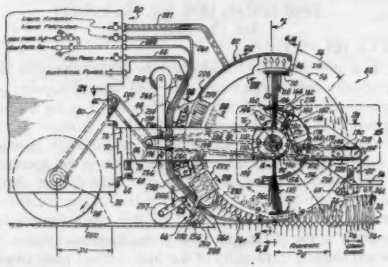
when said liner is freed from the formation drawing it out from said well.

4,236,581

HARVESTING MACHINE

Joseph E. Beckett, 4201 Bonita Rd. #140, Bonita, Calif. 92002

Filed Nov. 4, 1977, Ser. No. 848,762
Int. Cl.³ A01D *25/04*
U.S. Cl. 171—56 **34 Claims**



1. A machine for harvesting root row crops comprising plants having tops exposed above the ground, said harvesting machine comprising:

a vehicle movable along the plant rows,

a harvesting wheel rotatably mounted on said vehicle in a normally generally vertical longitudinal plane for movement with the vehicle along an individual plant row,

means for effecting rotation of said wheel in timed relation to movement of said vehicle along the plant rows,

said wheel including a pair of axially confronting plant gripping means about the wheel perimeter which are relatively movable locally toward one another to closed plant gripping positions and away from one another to open plant releasing positions and which rotate with the wheel through a plant receiving zone at the bottom of the wheel, then upwardly through a transfer zone to and

finally through an upper plant releasing zone back to said receiving zone,

said gripping means comprise two continuous circular rows of immediately adjacent opposing plant top gripping elements which are independently movable in closing movement toward one another and opening movement away from one another, and link means interconnecting adjacent gripping elements of each of said rows to form a continuous belt to provide a continuous sequence of such independent closing and opening movement of the gripping elements, and

means for effecting local opening and closing movement of said gripping means as said wheel turns in a manner such that said gripping means rotate through said receiving zone in open position to receive said plant tops between the gripping means and then close upon entering said transfer zone to grip the intervening plant top, extract the gripped plant from the soil, and transfer the extracted plants through said transfer zone to said plant releasing zone, and said gripping means reopen upon entering said releasing zone to release the extracted plants from said wheel,

said means for effecting opening and closing movement of said gripping means comprises means for effecting closing movement of the opposing gripping elements toward one another in succession as said gripping elements rotate from said receiving zone to said transfer zone and opening movement of the opposing gripping elements away from one another in succession as said gripping elements rotate from said transfer zone to said plant releasing zone,

said means for effecting opening and closing movement of said gripping elements comprising spring means for yieldably biasing said gripping elements in one direction of their opening and closing movement and cam means for moving said gripping elements in the opposite direction,

said spring means comprising spring fingers fixed to said wheel at one end and mounting said gripping element at the other end

and stressed to urge said gripping elements in said one direction of their opening and closing movement,

said cam means being engageable with said fingers in succession as said wheel turns for moving said gripping elements in said opposite direction.

4,236,582

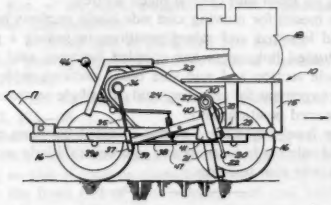
POWERED GROUND AERATOR

Paul F. Hastings, N. 5509 Market St., Spokane, Wash. 99207

Filed Feb. 12, 1979, Ser. No. 11,510

Int. Cl.³ A01B *45/02*

U.S. Cl. 172—22 **14 Claims**



1. A power aerator for forming a succession of holes along the ground surface while moving in a forward path, comprising:

a wheel supported frame;

power means mounted on the frame and including:

(a) a drive shaft journalled on the frame for rotation about a crank axis perpendicular to the forward path;

(b) an eccentric crank member mounted at one end of the drive shaft;

(c) an eccentric pivot on the eccentric crank member defining an eccentric pivot axis spaced from and parallel to the crank axis;

aerating means including a ground-penetrating member for displacing soil to form a hole in the ground surface, operatively connected to the power means for transmitting driving power to move the ground penetrating member vertically in relation to the ground surface to successively penetrate the ground surface;

wherein the ground penetrating member is mounted to the eccentric crank member for free pivotal movement about the eccentric pivot axis;

linkage means operatively connecting the ground-penetrating member and frame for imparting a horizontal oscillating motion to the ground penetrating member along an upright plane parallel to the forward path in response to operation of the power means including:

(a) a rocker arm mounted to the frame for pivotal movement thereon about an idler axis; and

(b) a cross bar rigidly connected to the ground penetrating member at one end and pivotably connected to the rocker arm at a remaining end for pivotal movement about a cross bar pivot axis spaced from the idler axis.

4,236,583

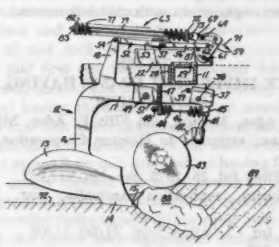
TOGGLE LINK TRIP AND RESET MECHANISM FOR EARTHWORKING TOOL

Cletus J. Geurts, Ridgeland, Wis., assignor to Geurts Inc., Minneapolis, Minn.

Filed Jan. 11, 1979, Ser. No. 2,699

Int. Cl.³ A01B *61/04*

U.S. Cl. 172—266 **45 Claims**



36. A trip mechanism comprising: a frame, a standard movably mounted on said frame, movable control means mounted on the frame, toggle link means movably mounted on the control means and standard, said control means having first means engagable with the toggle link means to move and hold the toggle link means in the over-center extended position, and second means engagable with the toggle link means to move the toggle link means toward a folded position thereby allowing the standard to move up from the earthworking position, and biasing means connected to the control means to bias the toggle link means to the over-center extended position and the standard to an earthworking position.

4,236,584

REAR FURROW WHEEL LOCKING STRUCTURE FOR DISK TILLERS AND THE LIKE

Henning Isachsen, St. Catherines, Canada, assignor to Deere & Company, Moline, Ill.

Filed Apr. 12, 1979, Ser. No. 29,214

Int. Cl.³ A01B *5/06, 73/00*

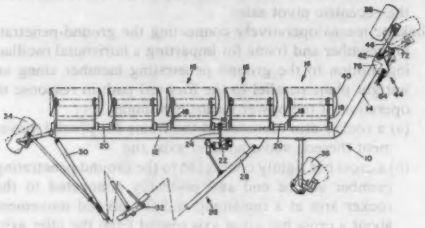
U.S. Cl. 172—385 **8 Claims**

1. In an agricultural implement having a frame member, a support member carrying a ground-engaging wheel adapted to support the frame member, said support member pivotally connected with the frame member for swinging movement

about an upright axis and an improved means between the frame member and support member for securing one said member in either a first or second position relative to the other said member comprising:

an elongated link means carried by said one member;

guide means carried by said other member and supporting the link means for reciprocable movement between a first and second position as the one member moves between its first and second position relative to the other member;



first locking means between the link means and the other member for engagably locking the link means in its first position and the one member in its first position relative to the other member;

second locking means between the link means and the other member for engagably locking the link means in its second position and the one member in its second position relative to the other member; and

means cooperative with the first and second locking means for selectably urging either of said first or second locking means into engagement with said link means.

4,236,585

FOLD-BACK IMPLEMENT FRAME HAVING ANGLE ADJUSTMENT

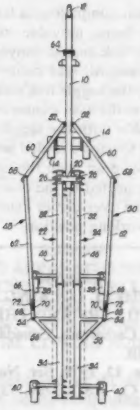
Raymond A. Adee, Newton, and Ellis E. Adee, Minneapolis, both of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Jul. 26, 1978, Ser. No. 927,957

Claims priority, application Australia, Apr. 28, 1977, 24682/77

Int. Cl.³ A01B *5/06, 73/00, 21/08*

U.S. Cl. 172—587 **18 Claims**



1. A horizontally folding implement including:

a central, fore-and-aft extending tongue supported for over-the-ground travel in the direction of its longitudinal axis;

a pair of vertical pivots associated with said tongue adjacent one end of the latter and on laterally opposite sides of said axis;

a pair of beams supported for over-the-ground travel and connected with said tongue by said pivots for horizontal swinging movement between laterally projected working positions and generally fore-and-aft extended transport positions;

means for releasably holding said beams in said working positions; and

a series of tools carried by each of said beams, respectively,

said pivots being connected with their corresponding beams intermediate the opposite ends of the beams so that each beam has a portion thereof extending inwardly beyond the corresponding pivot when the beams are in said working positions,

each of said series of tools including one or more tools along said portion of the corresponding beam,

said portions of the beams and the tools in said series along said portions being disposed to permit said swinging movement through an arc greater than ninety degrees without interference.

4,236,586

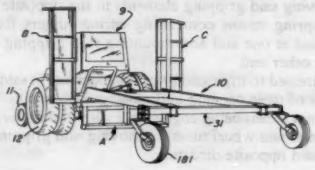
LAND LEVELING APPARATUS WITH SECTION BLADE ASSEMBLY

Benjamin A. Shader, Golden, and Bruce H. Mayeda, Longmont, both of Colo., assignors to The Eversman Mfg. Company, Denver, Colo.

Filed Jan. 16, 1978, Ser. No. 869,852

Int. Cl.³ E02F *3/76*

U.S. Cl. 172—779 **19 Claims**



13. In land leveling apparatus, the combination comprising:

a sectional blade assembly including:

a central blade section;

two side blade sections pivotally connected at opposite ends of said central blade section to swing between a lowered position extending laterally out from an end of said central blade section and a raised position extending up from said central blade section;

drive means for moving said side blade sections between said lowered and raised positions including a power-actuated linkage means coupled between said central blade section and said side blade sections with a lock arrangement for retaining said side blade sections in the lowered position; and

lower level adjustment means coupled between each of said side blade sections and said central blade section at a lower rear position.

4,236,587

GROUND-WORKING APPARATUS AND HITCH ASSEMBLY THEREFOR

Benjamin A. Shader, Golden, and Bruce H. Mayeda, Longmont, both of Colo., assignors to The Eversman Mfg. Company, Denver, Colo.

Division of Ser. No. 869,852, Jan. 16, 1978. This application Apr. 23, 1979, Ser. No. 32,281

Int. Cl.³ E02F *3/76*

U.S. Cl. 172—779 **14 Claims**

13. In a ground-working assembly including a trailing at-

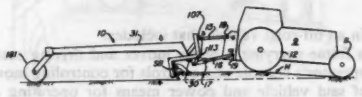
tachment with a ground-working tool and a tow vehicle for said attachment having front and rear wheels, an upper link pivotally connected at a forward end portion to said tow vehicle for pivotal up-and-down movement relative to the tow vehicle, and lower link means pivotally connected at a forward end portion to said tow vehicle for pivotal up-and-down movement relative to the tow vehicle, the combination comprising:

a leveling frame extending rearwardly from the tool with a rear ground-engaging member supporting the attachment at the rear thereof for vehicular movement; and

a hitch assembly for said attachment including:

first connecting means between said upper link and the attachment including a first pivot about which said upper link and attachment are pivotally movable up and down during vehicular movement, and

second connecting means between said lower link means and said attachment including lower hitch arm means and a second pivot below said first pivot about which said attachment and said lower hitch arm means are



pivotally movable up and down during vehicular movement, said lower hitch arm means having a forward end portion connected to said lower link means and a rear end portion connected to said attachment, the connection at said rear end portion including said second pivot to provide a leveling linkage between the pivotal connections at the forward end portions of said upper link and lower link means together with said first and second pivots whereby the tool moves vertically independently of the vertical movement of the rear wheels of the tow vehicle and in relation to a ground plane contacted by the front wheels of the tow vehicle and the rear ground-engaging member during the vehicular movement of the tow vehicle and trailing attachment,

said second connecting means including a third pivot between said forward end portion of said lower hitch arm means and said rear end portion of said lower link means about which said lower link means and said lower hitch arm means are pivotally movable up and down during vehicular movement.

4,236,588

HAMMER DRILL WITH A LOCKABLE TOOL HOLDER

Karl Möldan, Munich, and Wilm Krueger, Gröbenzell, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

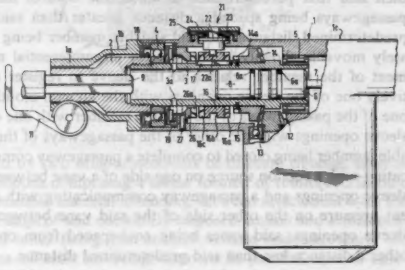
Filed Jun. 8, 1978, Ser. No. 913,542

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1977, 2728961

Int. Cl.³ B23B *45/02, 45/04;* F16H *25/12*

U.S. Cl. 173—48 **10 Claims**

1. Hammer drill comprising a housing having a front end and a rear end, tool holder means located within said housing and having an axis of rotation extending in the direction of the rear end to the front end of said housing, said tool holder means having a front end facing in the same direction as the front end of said housing and a rear end spaced axially from the front end of said tool holder means and located closer to the rear end of said housing, said tool holder means arranged to receive the shank end of a tool, first means disposed in said housing for rotating said tool holder means, second means disposed in said housing for applying percussion force to said tool mounted in said tool holder means, said first means includes a drive wheel positioned in said housing for rotation about the axis of rotation of said tool holder means, a coupling member located within said housing and encircling the axis of rotation of said tool holder means, said coupling member secured to said tool holder means for rotation therewith and said coupling member being axially displaceable along the axis of rotation of said tool holder means, an adjustment member mounted on said housing and connected to said coupling member for axially displacing said coupling member between a first position in engagement with said first means for rotating said tool holder means, a second position axially displaced from engagement with said first means for affording idle rotation of said tool holder means and a third position spaced axially from the first and second positions with said coupling member in locked engagement with said housing so that only said second means is effective for imparting percussion force to a tool received in said tool holder means wherein the improvement comprises that said second means is separate from said first means and is capable of imparting percussion force in each of the first and third positions of said coupling member, said coupling member has a first



end face and a second end face in axially spaced relation to said first end face and each extending transversely of the axial direction of said tool holder means, first interengagement means on said first end face and a second interengagement means on said second end face of said coupling member, said drive wheel having third interengagement means for engagement with said first interengagement means, said housing at a position spaced in the direction of the axis of rotation of said tool holder means from said drive wheel having fourth interengagement means thereon for engagement with said second interengagement means on said coupling member, and said coupling member being axially displaceable between said drive wheel and said fourth interengagement means on said housing so that in the first position said first and third interengagement means are engaged and in the third position said second and fourth interengagement means are engaged.

4,236,589

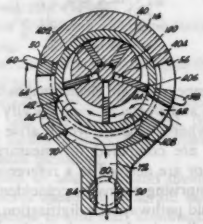
VACUUM MOTOR

Vern Griffith, P.O. Box 402433, Miami Beach, Fla. 33140

Filed Dec. 26, 1978, Ser. No. 973,083

Int. Cl.³ B23B *45/04*

U.S. Cl. 173—169 **7 Claims**



1. A vacuum driven motor comprising a housing including a stator with a cylindrical rotor chamber, a cylindrical rotor eccentrically journaled for rotation within the stator chamber

said rotor having an axially projecting portion extending outwardly of the stator, said rotor including a plurality of circumferentially spaced radially extending slits and a rotor vane radially slidably captivated in each slit between the stator and the rotor, said stator including a liner means of sleeve form between the rotor and the stator, said sleeve having a first and second circumferentially spaced, radially extending through opening for fluid flow into and out of the space between said rotor and said sleeve, said through opening being circumferentially spaced a first predetermined distance from one another, said housing having an acurate slot extending a distance greater than said first predetermined distance, a circumferentially movable arcuate control member slidably captivated in said slot, said member having a first and second circumferentially spaced radially extending passageway and with an intermediately arcuate through mouth of a circumferential span less then said first perdetermined distance, the control member passageways being spaced a distance greater than said first predetermined distance and said slidable member being arcuately movable slidably in the slot for circumferential movement of the member relative to the sleeve to register selectively one of the sleeve openings with the arcuate mouth and one of the passageways of the slidable member with one of the sleeve openings with the other of the passageways of the slidable member being closed to complete a passageway communicating with a suction source on one side of a vane between the sleeve openings and a passageway communicating with ambient pressure on the other side of the said vane between the sleeve openings, said vanes being equi-spaced from one another a distance less than said predetermined distance.

4,236,590

BALANCE WITH COMPENSATED LOADING AND REFERENCE SYSTEMS

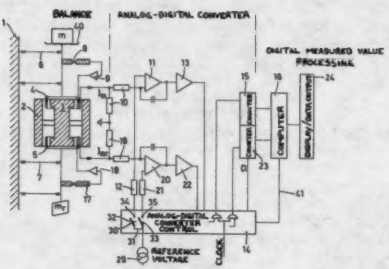
Erich Knothe, Bovenden, and Franz-Josef Melcher, Hardegsen, both of Fed. Rep. of Germany, assignors to Sartorius GmbH, Göttingen, Fed. Rep. of Germany

Filed Jan. 23, 1979, Ser. No. 5,830

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1978, 2803682

Int. Cl.³ G01G *19/00, 7/00*

U.S. Cl. 177—200 **9 Claims**



1. In a balance with an electromagnetically compensated loading system and an electromagnetically compensated reference system, wherein signals which arise or are derived in a load pathway are compared for measurement with signals which appear or are derived in a reference pathway, the improvement comprising means for coincidentally processing the signals from said pathways for digitization, beginning simultaneously and ending simultaneously, and including a respective analog-to-digital converter connected in said load pathway and in said reference pathway, and a reference voltage source, each of said converters being connected to said reference voltage source.

4,236,591

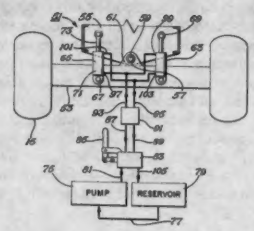
OFF-ROAD VEHICLE THAT BOTH OSCILLATES AND ARTICULATES

Lloyd A. Molby, Box 7788, Longview, Tex. 75602

Filed Aug. 17, 1978, Ser. No. 934,586

Int. Cl.³ B60G *19/10*

U.S. Cl. 180—41 **1 Claim**



1. In an off-road vehicle that includes:

a. a frame carrying a prime mover and driving means, an operator's console and controls for controling movement of said vehicle and power means for operating attachments;

b. a plurality of four wheels carrying said frame;

c. means for steering said vehicle;

the improvement comprising means for effecting both articulation and oscillation of said vehicle and including:

d. having said frame formed in two sections including a first section and a second section with an articulation joint including a vertical axis interconnection and at least one steering ram disposed laterally from said axis interconnection and between the sections for enabling the operator control of the articulation of said vehicle; each section being carried by two of said four wheels; said first section being a front section with a front frame member, said two wheels carrying said front section being laterally connected by a front axle;

e. attachment means on said first section for mounting an attachment for performing work by said vehicle;

f. leveling means on said first section and operable to effect a predetermined angular position with respect to said front axle; said leveling means including a pivotal interconnection between said front axle and said front frame member near their respective midpoints; said leveling means thereby effecting oscillation of said vehicle and enabling effecting a more nearly level platform as signaled by the operator for most effective operation of said attachment;

g. controls disposed in said control console and connected with said leveling means and said power means for enabling operator control of said oscillation such that said first section can be kept at substantially the operators desired angular position;

h. hydraulic reservoir;

i. said power means including a hydraulic pump connected with said hydraulic reservoir via conduits;

j. a pair of hydraulic rams physically connected with said front axle and said front frame member respectively, on respective right and left sides of said pivotal interconnection at respective predetermined distances;

k. a hydraulic flow control valve included in said controls for controlling flow of hydraulic fluid to and from said hydraulic rams as the operator may direct; said hydraulic flow control valve being connected by high pressure fluid conduit with said hydraulic rams and said hydraulic pump and by fluid conduit with said hydraulic reservoir; said distances and said hydraulic rams being selected such that said front frame member can be tilted to obtain said predetermined angular position with respect to said axle; and

l. a lock valve being interposed between said hydraulic flow control valve and said hydraulic rams for providing a

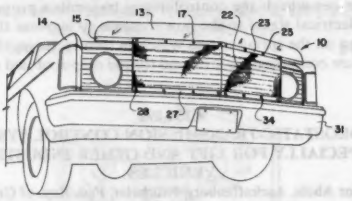
positive liquid lock for retention of said front frame member in a predetermined attained position and preventing leaking of hydraulic fluid from hydraulic rams holding it in said position until said lock valve is unlocked by said hydraulic flow control valve and hydraulic pressure from said pump.

4,236,592

PROTECTIVE STRUCTURE FOR VEHICLES

John H. Ziegler, Longmont, Colo., assignor to Autotron Products, Inc., Longmont, Colo.

Filed Jan. 10, 1977, Ser. No. 758,290
Int. Cl.³ B60J *1/20*; B60K *11/04*
U.S. Cl. 180—68 P **7 Claims**



1. A structure for protecting the frontal area of a vehicle having an upper forward facing frontal area and a lower forward frontal area, the structure comprising:

an elongated, substantially flat, planar air deflector member having upper and lower portions and an air deflecting surface, and being adapted to be transversely mounted adjacent to the upper frontal area of a vehicle;

releasable fastener means disposed upon the lower portion of the air deflector member;

a pliable cover having upper and lower edges and carrying along the upper edge thereof releasable fastener means complementary to the releasable fastener means disposed along the lower portion of the air deflector member;

securing means positioned along the lower edge of the pliable cover and adapted to be releasably attached to the lower portion of the frontal area of a vehicle immediately below the pliable cover, said securing means tensioning the pliable cover between the air deflector member and the lower portion of the frontal area of a vehicle immediately below the pliable cover; and

bracket mounting means extending from the air deflector member and adapted to be fixedly attached to an adjacent upper frontal area of a vehicle and to independently support the air deflector member to a vehicle;

whereby the air deflector member may be conveniently and attractively mounted to a vehicle at a point adjacent the upper forward frontal area of said vehicle, said air deflector member serving as an upper support for the pliable cover.

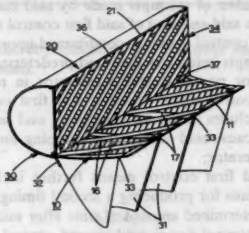
4,236,593

AIR CUSHION VEHICLE FLEXIBLE SKIRTS

Raymond L. Wheeler, Cowes, England, assignor to British Hovercraft Corporation, Yeovil, England

Continuation of Ser. No. 817,863, Jul. 21, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,403
Claims priority, application United Kingdom, Jul. 22, 1976, 30487/76
Int. Cl.³ B60V *1/16*
U.S. Cl. 180—128 **6 Claims**

1. An air cushion for a vehicle having a rigid body structure, means on the vehicle for forming a cushion of pressurised air between the underside of the rigid body structure and a surface over which the vehicle is supported during operation, cushion sealing means extending downwardly from said rigid body structure to encompass said cushion of pressurised air, said cushion sealing means including a flexible skirt assembly of two-part configuration in which an upper part is formed by an inflatable bag member attached to the vehicle hard structure along inner and outer fixing lines which are spaced apart and one of which is situated outboard of the other with respect to the air cushion, said bag member comprising an outwardly disposed section formed from reinforced flexible impermeable sheet material extending generally downwardly from attachment to said vehicle body structure at said outer fixing line to terminate at a lower edge, and an inwardly disposed section



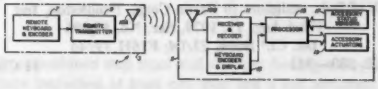
formed by two criss-crossed sets of discrete ribbons, each of said ribbons comprising a fabric formed of reinforced flexible impermeable material extending between attachment with the lower edge of said outwardly disposed section and attachment at said inner fixing line on said vehicle body structure, the ribbons of each set being disposed in parallel, spaced apart relationship throughout their length whereby apertures defined by longitudinal edge portions of said discrete ribbons place the space enclosed by the bag member and the rigid body structure in communication with the air cushion.

4,236,594

SYSTEM FOR AUTOMATICALLY CONTROLLING AUTOMOTIVE STARTING AND ACCESSORY FUNCTIONS

David C. Ramsperger, Phoenix, Ariz., assignor to Skip D. McFarlin, Phoenix, Ariz., a part interest

Filed Aug. 21, 1978, Ser. No. 935,387
Int. Cl.³ F02N *11/08*
U.S. Cl. 180—167 **5 Claims**



1. A system for automatically starting an engine of an automobile in response to a start command, said system comprising in combination:

(a) command means for entering said start command into said automatic starting system;

(b) status means for producing an engine status signal if said engine is running;

(c) means responsive to a first control signal for energizing a starter motor of said automobile;

(d) first control means responsive to said command means for generating said first control signal, thereby causing said energizing means to energize said starter motor, said first control means including;

(i) means coupled to said command means for enabling said first control means to generate said first control signal in response to said start command if said engine status signal is not present;

(ii) first timing means for producing a first timing signal a first predetermined time after said first control signal is generated;

(iii) means responsive to said first timing signal and said

engine status signal for stopping said first control signal, thereby de-energizing said starter motor if said engine is not running after said first predetermined time; (iv) second control means responsive to said first timing signal for enabling said first control means to generate said first control signal a predetermined number of times in response to said start command if said engine status signal is not present after said first predetermined time has elapsed;

(v) counting means for counting a number of times said first control signal is generated in order to determine the number of attempts made by said start command, wherein said enabling of said first control means by said second control means is conditioned upon said number of attempts being less than said predetermined number;

(e) means for pumping said accelerator in response to a second control signal wherein said first control means further includes means for generating said second control signal to cause said accelerator pumping means to pump said accelerator;

wherein said first control means further includes second timing means for producing a second timing signal a second predetermined amount of time after said stopping of said first control signal, said second control means being also responsive to said second timing signal, said second means causing said first control means to generate said first control signal if said engine is not running, said number of times is less than a predetermined number, and said second predetermfined amount of time has elapsed after said stopping of said first control signal; and

(f) a remote transmitter located externally of said automobile, a receiver located in said automobile and coupled to said start command entering means, and remote start command entering means connected to said remote transmitter for causing said remote transmitter to transmit said start command to said receiver, said receiver including means for detecting said transmitted start command and entering said transmitted start command to said system;

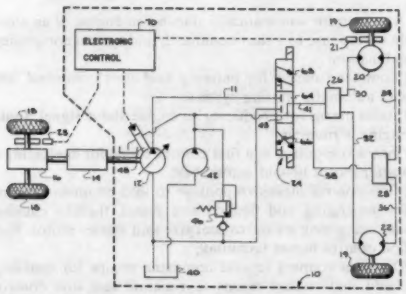
whereby, said first control means attempts to restart said engine a plurality of times in response to said start command if the earlier attempts fail to start said engine in response to said start command.

4,236,595

AUXILIARY DRIVE SYSTEM

Richard A. Beck, West LaFayette, and Glen T. Presley, Angola, both of Ind., assignors to Parno Corp., Brookston, Ind.

Filed Aug. 17, 1979, Ser. No. 67,396
Int. Cl.[3] B60K *25/04;* F16H *39/46*
U.S. Cl. 180—243 **11 Claims**



1. A hydraulic auxiliary drive system for the steerable non-driven wheels of a vehicle in assistance with the main drive wheels, comprising:

two hydraulic motors connected in a parallel hydraulic circuit, each motor driving a non-driven wheel;

speed sensing means on the main drive wheels and the non-driven wheels;

a variable displacement pressure compensated pump supplying said motors including a control servo cylinder acting against a spring means, the servo controlling the displacement of the pump, a sensing line connecting the pump discharge with the servo cylinder;

a power means contacting the spring means for proportionally adjusting the loading on said spring means in accordance with the level of an electrical signal received by said power means;

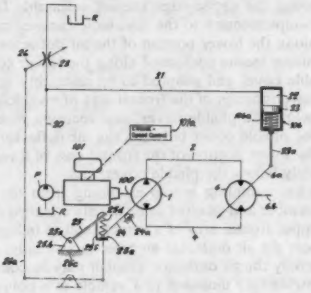
an electronic control means connected to the sensing means for receipt of signals indicating the relative speeds of the driven and non-driven wheels so that when a certain percentage of slip is sensed between the driven and non-driven wheels the control means transmits a proportional electrical signal to the power means to increase the loading on the spring means which in turn increases the pressure compensating level and torque output of said motors.

4,236,596

HYDROSTATIC-TRANSMISSION CONTROL SYSTEM, ESPECIALLY FOR LIFT AND OTHER INDUSTRIAL VEHICLES

Theodor Abels, Aschaffenburg-Nilkheim, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 688,774, May 21, 1976, Pat. No. 4,108,265. This application Dec. 23, 1977, Ser. No. 863,622
Claims priority, application Fed. Rep. of Germany, May 22, 1975, 2522719
The portion of the term of this patent subsequent to Aug. 22, 1995, has been disclaimed.
Int. Cl.[3] B60K *17/10*
U.S. Cl. 180—307 **2 Claims**



1. A drive comprising:

a hydrostatic transmission including:

a variable-displacement pump,

a setting member operatively connected to said pump for varying the displacement thereof,

at least one variable displacement hydraulic motor having a displacement controlling element and hydraulically connected to said pump so as to be driven thereby,

a motor-setting unit including a cylinder, a piston displaceable in said cylinder and connected to said element and a spring bearing upon said piston;

an internal-combustion engine connected to said pump for driving same;

a constant displacement auxiliary pump connected to said engine and driven thereby;

means forming a hydraulic-fluid path including a throttle leading from said auxiliary pump to a reservoir;

a line connecting said path between said auxiliary pump and said throttle with said cylinder; and

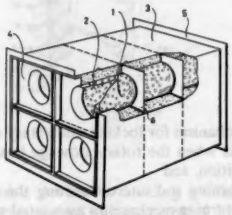
control means including said auxiliary pump, said fluid path, said line and means connected to said setting member for operating same to exclusively control the transmission ratio by varying the displacement of said variable-displacement pump at low to average output speeds of the transmission and for enabling said motor-setting unit to exclusively control said transmission ratio for high output speeds of the transmission.

4,236,597

SOUND-ABSORBING DEVICE, ESPECIALLY FOR DAMPING OF NOISES EXPANDING IN AIR DUCTS

Sandor Kiss, and Zsolt Nagy, both of Budapest, Hungary, assignors to Fütöber Epületgepeszeti Termekeket Gyarto Vallalat, Budapest, Hungary

Filed Apr. 7, 1978, Ser. No. 894,375
Claims priority, application Hungary, Apr. 8, 1977, FU-354
Int. Cl.³ F04F *17/04;* F01N *1/24*
U.S. Cl. 181—224 **1 Claim**



1. A sound-absorbing device for use in the transmission of ventilating air, comprising:

a prismatic elongated casing having a pair of end walls and a plurality of angularly adjoining longitudinal walls;

at least one air-flow duct of round cross section extending between said end walls and terminating therein while passing through said casing in all around spaced relation from said longitudinal walls; and

a mass of sound-absorbing material without parallel surfaces filling said casing between said end walls and around said duct, said sound-absorbing material having a thickness around said duct as measured in each plane perpendicular thereto which varies continuously about the periphery of the duct, said casing having a square cross section in said planes and said duct having a circular cross section in said planes and being conical from one of said end walls to the other, a plurality of such ducts being provided in spaced-apart relation within said casing and being all spaced from said longitudinal walls, said sound absorbing-material surrounding each duct in each such plane, said sound-absorbing material being subdivided by plates in said casing perpendicular to said ducts.

4,236,598

ROTATING SELF-CLEANING SOUND ABSORBER FOR DUCTS

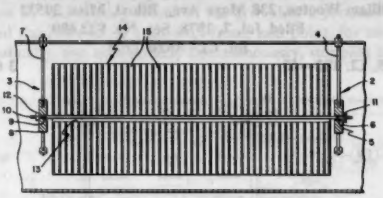
Leslie S. Wirt, Newhall, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Jun. 6, 1978, Ser. No. 913,045
Int. Cl.³ F01N *1/02, 1/18, 3/02*
U.S. Cl. 181—231 **6 Claims**

1. In combination with a duct for the flow of a gas therethrough, a self-cleaning sound absorption structure located within said duct, comprising:

an elongated resonant absorber member having an exterior sound receiving surface spaced from the interior wall of said duct, said surface having apertures which present a substantially unrestricted path into said absorber member for contaminants impinging on said surface; and

means for rotatably mounting said absorber member about its major axis within said duct to allow said contaminants to freely exit from said apertuers as said absorber member



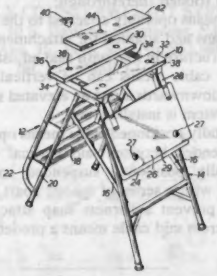
rotates, thereby cleaning said absorber member of said contaminants.

4,236,599

STOOLS

Brian A. Luff, and Ronald P. Hickman, both of Jersey, Channel Islands, assignors to Inventec Licensing BV, Lomboklaan, Netherlands

Filed Nov. 28, 1978, Ser. No. 964,357
Claims priority, application United Kingdom, Nov. 28, 1977, 49477/77
Int. Cl.³ A47C *13/00;* B25M *1/00*
U.S. Cl. 182—33 **29 Claims**



1. In a combined step stool and vise unit having a supporting structure including at least one step and a top structure supported thereon, the improvement comprising:

means for providing a vise-unit mode of use of said top structure, said means including (1) first and second elongate members having opposed elongate edges, said elongate members providing an upwardly facing working surface at least when said top structure is in said vise-unit mode of use, and (2) means for urging said elongate members transversely towards and away from each other so as to permit gripping of a workpiece therebetween at least when said top structure is in said vise-unit mode of use; and

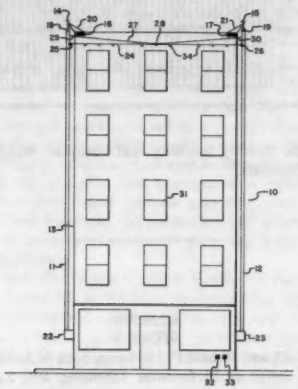
means for providing a seat-unit mode of use of said top structure, said means including (1) means for normally defining an upwardly facing, substantially continuous, seat-forming surface when said top structure is in said seat-unit mode of use and (2) means for permitting movement of at least a part of said seat-forming surface out of seat-forming relation to said supporting structure for permitting conversion of said top structure from said seat-unit mode of use to said vise-unit mode of use.

4,236,600

VERTICAL HORIZONTAL RESCUE SYSTEM

William Wooten, 238 Moye Ave., Biloxi, Miss. 39532

Filed Jul. 7, 1978, Ser. No. 922,650
Int. Cl.[3] A62B *1/06*
U.S. Cl. 182—43 **3 Claims**



1. A vertical horizontal rescue system comprising:

(a) at least one pair of vertically oriented spaced apart cable means;

(b) adjustable pulley means adapted to receive said cable means and for mounting upon an elevated structure so as to allow said cable means to be vertically suspended therefrom and rotated therethrough;

(c) winch means operably attached to the bottom portion of said cable means and adapted for attachment to the bottom of an elevated structure in line with said adjustable pulley means whereby said cable means can be vertically actuated to go upwards and downwards along an elevated structure on which the present system is installed; and

(d) horizontally positioned cable means operably attached to and suspended between said vertical cable means, said horizontally positioned suspended cable means being provided with a series of spaced apart enlarged portions so as to prevent a harness snap attached thereto from sliding across said cable means a predetermined length of travel.

4,236,601

TURNING TYPE EMERGENCY ESCAPE

Hiromitsu Naka, Tokyo Kenkyusho of Kabushiki Kaisha Naka Gijutsu Kenkyusho, No. 39, Oaza Shinmachi, Yashio-shi, Saitama-ken, Japan

Filed Dec. 27, 1978, Ser. No. 974,112
Claims priority, application Japan, Nov. 2, 1978, 53-135416
Int. Cl.[3] E06C *9/10, 5/04*
U.S. Cl. 182—76 **8 Claims**

8. A turning type emergency escape system for installation in a multi-story building having a veranda on at least some of the stories, said escape system comprising:

a plurality of escape devices, one for each veranda, and each having:

a stowage box having means for rotatably mounting said box on a veranda;

an evacuation passage defined in said stowage box;

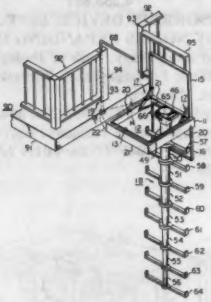
an upper cover closing the upper opening of said evacuation passage;

a lower cover closing the lower opening of said evacuation passage;

a cover interlocking mechanism interlocking said upper and lower covers for simultaneously opening and closing the two covers;

an extensible evacuation means in said stowage box and extendable to the next lower veranda on the building;

a turning mechanism connected to said stowage box for rotating said stowage box between retracted and protruded positions, said turning mechanism including an operating handle secured at the lower end to said rotary stowage box for rotatably mounting the rotary stowage box on the corresponding veranda;



a locking mechanism for locking said rotary stowage box to the veranda when the rotary stowage box is in said protruded position; and

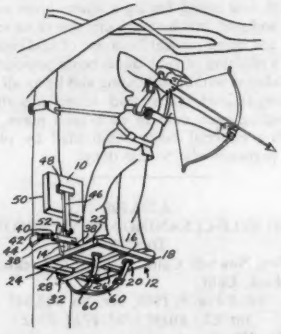
a common turning rod interconnecting the operation handles of the turning mechanisms associated with the respective floors of the multi-story building, and handles secured to said common turning rod at the respective floors, and a common connecting rod interconnecting the locking levers of said rotation mechanisms on the respective floors of the building.

4,236,602

TREE STAND AND SEAT

Paul Leggett, 914 Woodville Dr., Jackson, Miss. 39212

Filed Aug. 18, 1978, Ser. No. 935,494
Int. Cl.[2] A45F *3/26*
U.S. Cl. 182—187 **22 Claims**



1. A combination stand and seat structure attachable to a vertically extending object comprising:

frame means;

means for removably attaching said frame means to said object;

a stand;

stand attaching means for pivotably attaching said stand to said frame means;

a seat;

a seat attaching means for pivotably attaching said seat to said frame means; and

means for selectively adjusting the pitch of said seat relative to said frame means, said pitch adjusting means being pivotably attached to said frame means.

4,236,603

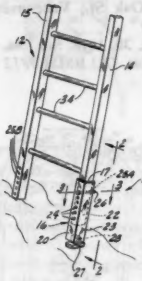
LADDER LEVELING DEVICE

Charles D. Talley, 7905 Joel, Affton, Mo. 63123

Filed Nov. 9, 1978, Ser. No. 959,098

Int. Cl.³ E06C *7/44*

U.S. Cl. 182—204 **12 Claims**



1. An adjustable device for leveling a ladder including a ladder having two spaced stiles connected by a plurality of spaced ladder rungs therebetween, each of said stiles having front and rear faces, a ground engaging end portion and at least one bore extending through the stile adjacent to the ground engaging lower end portion thereof and in a direction extending from the front face to the rear face, the adjustable device comprising an elongated channel shaped ladder extending member defined by two spaced opposed side walls and a connecting wall extending therebetween, said channel shaped member being of a size to cooperatively engage and embrace a selected one of the ladder stiles adjacent to the ground engaging end portion thereof to form an aligned extension of the stile, a plurality of spaced apertures in each of said opposite side walls of the channel shaped member, each of the apertures in one of said side walls being in lateral alignment with a corresponding aperture in the other of said opposite side walls to form pairs of aligned apertures, each of the said pairs of aligned apertures being selectively registrable with the bore in the stile in different positions of the channel shaped member on the stile, and a pin member insertable through a selected aperture pair on the channel shaped member and through the bore in the stile in registration therewith to hold the channel shaped member in a desired position of adjustment and extension on said stile.

4,236,604

START/STOP CONTROL OF CONVEYING MEANS

Robert A. Warner, Elgin, Ill., assignor to Tri-Tronics Company, Inc., Oak Brook, Ill.

Filed Mar. 30, 1979, Ser. No. 25,725

Int. Cl.³ G61D *15/00*

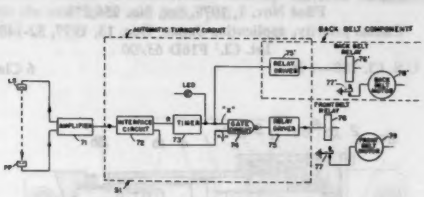
U.S. Cl. 186—61 **8 Claims**

1. In a checkout system for retail stores in which products upon arrival at the delivery end of a conveying means are removed by the checkout clerk, one by one, for check out,

a start/stop arrangement for said conveying means,

said arrangement including at said delivery end of the conveying means, a beam of radiation and sensing means cooperating with said beam for detecting the crossing of said beam by a product upon its arrival at said delivery end, and also including a start/stop control circuit connected to and controlled by said sensing means,

said control circuit providing two alternative paths for controlling said conveying means from said sensing means, one of said paths being effective responsive to the detection by said sensing means of the arrival of a product at, and the removal of a product from, said point, for automatically, and substantially instantaneously, stopping and



starting said conveying means, respectively, and the other of said paths including timing means and being effective responsive to no such product being detected by said sensing means within a predetermined time for automatically bringing about the delayed stopping of said conveying means.

4,236,605

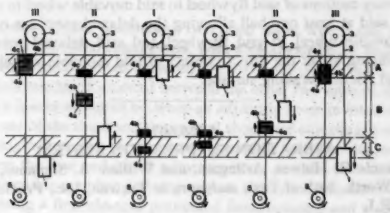
VARIABLE COUNTERWEIGHT SYSTEM

Charles Lindbergh, 10 S. Basilica, Charleston, S.C. 29406

Filed Aug. 15, 1978, Ser. No. 933,886

Int. Cl.³ B66B *17/12*

U.S. Cl. 187—94 **12 Claims**



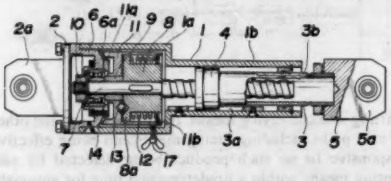
1. A variable counterweight system comprising a load which is subjected to varying static and dynamic forces during movement, a counterweight assembly adapted to counteract the varying forces acting on the load during its movements, movement means interconnecting the load and counterweight assembly and being fixedly attached to the load, said counterweight assembly including plural separate counterweight segments, one segment only being fixedly attached to the movement means and the remaining segments of the counterweight assembly being movably connected with said movement means, and spaced rigid interceptor means separate from the movement means and fixedly positioned relative to the path of movement of the movement means for supporting said remaining segments along the path of movement of the movement means and acting on said remaining segments one at a time in succession during movement of the movement means in one direction to completely isolate each segment from the load thereby varying the effectiveness of the counterweight assembly as a function of its position in relation to the load.

4,236,606

FRICTION BRAKING TYPE VIBRATION DAMPER

Katsuaki Sunakoda, Shimookamoto 3779-8, Kawachi-machi, Kawachi-gun, Tochigi-ken, Japan, and Yoshikazu Ito, 3747-2, Shimookamoto, Kiwachi-machi, Kawachi-gun, Tochigi-ken, Japan

Filed Nov. 1, 1978, Ser. No. 956,575
Claims priority, application Japan, Dec. 13, 1977, 52-148798
Int. Cl.[3] F16D *63/00*
U.S. Cl. 188—1 B 6 Claims



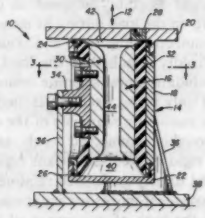
1. A friction braking type vibration snubber comprising a pair of supporting members fitted to make axially reciprocating motions relative each other, one of said members having a friction braking surface; a rotatable flywheel having a first surface, means for converting the relative axial motion of said pair of supporting members to rotary motions of said flywheel, a movable wheel having a second surface facing said first surface and rotatable relative to and with said flywheel and movable in the axial direction toward and away from said braking surface, and means for rotationally interconnecting said movable wheel and said flywheel and for moving said movable wheel axially away from said flywheel and toward engagement with said braking surface upon a difference in rotational speed between said movable wheel and flywheel, said means for interconnecting and moving comprising generally opposed recesses of generally conical cross-section defined in said first and second facing surfaces and at least one ball inserted between said opposed recesses to transmit the rotary motions of said flywheel to said movable wheel to rotate it, said at least one ball allowing the delayed rotations of said movable wheel to said flywheel and said delayed rotations bringing about the direct contact of said movable wheel with said friction braking surface.

4,236,607

VIBRATION SUPPRESSION SYSTEM

Dennis R. Halwes, Arlington, and William A. Simmons, Fort Worth, both of Tex., assignors to Textron, Inc., Providence, R.I.

Filed Feb. 26, 1979, Ser. No. 15,230
Int. Cl.[3] F16F *9/10*
U.S. Cl. 188—1 B 20 Claims



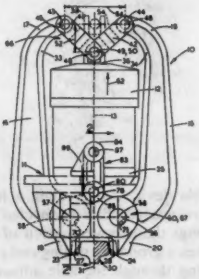
1. A vibration damper, comprising:
a housing having an inner chamber;
a piston in said housing having a cross-sectional dimension to substantially fill the inner chamber and forming spaced apart chambers on opposite ends of said piston in the housing;
a passage extending through said piston to interconnect the spaced apart chambers;
resilient mounting means bonded between the outside surface of said piston and the walls of the inner chamber, said mounting means forming a seal between the spaced apart chambers; and
a tuning mass, including a liquid, substantially filling said passage and the spaced apart chambers.

4,236,608

COMPACT CALIPER BRAKE

Jacob Kobelt, 6110 Oak St., Vancouver, British Columbia, Canada (V6M 2W2)

Filed Oct. 30, 1978, Ser. No. 955,963
Int. Cl.[3] B61H *7/12*
U.S. Cl. 188—43 13 Claims



1. A caliper brake assembly having: a frame; a pair of caliper arms hinged for rotation about respective hinge axes and having outer ends adapted to carry brake shoes for forcing against braking surfaces disposed between the shoes; an extensible and retractable actuator connected to the frame and having an axis of extension and retraction disposed longitudinally of the caliper arms and within a plane passing between hinge axes of the caliper arms; toggle means cooperating with the actuator and the caliper arms to apply a force to the caliper arms as the actuator is actuated; the brake assembly being further characterized by:
(a) swivel mounting means cooperating with the caliper arms or the actuator to permit relative swinging between the hinge axes of the caliper arms and the axis of the actuator about a swivel axis disposed parallel to the hinge axes of the caliper arms,
so as to permit limited lateral shifting of the brake shoes to accommodate asymmetrical disposition of the braking surfaces.

4,236,609

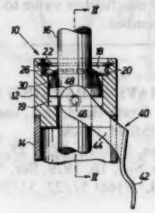
RELEASABLE LOCKING DEVICE FOR PIPES, SHAFTS AND THE LIKE

John Carlsson, Oskarshamn, Sweden, assignor to Stiftelsen Kalmarsundsgruppen, Kalmar, Sweden

Filed Nov. 27, 1978, Ser. No. 963,929
Claims priority, application Sweden, Dec. 14, 1977, 7714229
Int. Cl.[2] B65H *59/10*
U.S. Cl. 188—67 9 Claims

1. A telescopeable assembly comprising an outer tubular member receiving an inner member for relative axial displacement therebetween, a locking device rigidly connected with said outer member for locking said members in any selected relative position, an operating means for manually actuating said locking device to thereby place said locking device into either a locking position in which it engages said inner member so that the members are fixed in a desired adjusted position

relative to each other, or a free position, in which both members are mutually freely displaceable, wherein said locking device comprises the combination of (a) a locking element in the form of an annular washer surrounding the inner member and having radially directed resilient teeth permanently upstanding obliquely from the plane of the washer and adapted for engaging with said inner member in said locking position,



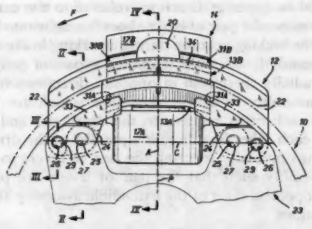
(b) a lifting annulus located adjacent the teeth of the washer and surrounding the inner member, and (c) a pivotable cam member mounted adjacent the lifting annulus and responsive to actuation of said operating means for urging said lifting annulus into contact with said teeth and bending them against their resilience to a free position further out of the plane of the washer and out of their locking engagement to place the locking device in its said free position.

4,236,610

CALIPER BRAKE WITH AXIALLY ELONGATE CYLINDRICAL BRAKING MEMBER

Rene Billet, Lamorlaye, France, assignor to Societe Anonyme Francaise du Ferodo, France

Filed Jan. 23, 1979, Ser. No. 5,722
Claims priority, application France, Jan. 27, 1978, 78 02269
Int. Cl.[3] F16D *53/00*
U.S. Cl. 188—76 **7 Claims**



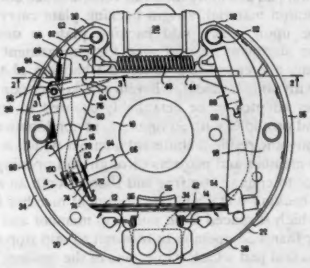
1. A caliper brake comprising a fixed support, a rotatable braking member of generally axially elongate cylindrical configuration, brake pads disposed respectively inside and outside the cylindrical braking member, a C-shaped caliper member disposed radially of and straddling said cylindrical braking member and said brake pads inside and outside thereof, said caliper member including a first arm having force-applying means for urging a first of said brake pads towards the cylindrical braking member and a second arm cooperable with a second of said brake pads so that in response to the operation of said force-applying means said caliper member transmits a corresponding force to said second brake pad whereby said brake pads grip said cylindrical braking member along a generally radial gripping axis passing through central zones of said brake pads; wherein the improvement comprises said fixed support having two legs disposed respectively on opposite sides of an axial gripping plane containing the gripping axis, said legs each having a circumferential bearing surface for each of said brake pads for circumferentially maintaining said brake pads during braking and two fastener apertures for receiving fastener means for fastening said fixed support to a support member, at least one of said fastener apertures in one of said legs having a portion thereof lying on a circle concentric with the axis of the cylindrical braking member along which also lie portions of the circumferential bearing surfaces associated with the associated said brake pad.

4,236,611

BRAKE SHOE ADJUSTING STRUCTURE FOR A DRUM BRAKE

Jean-Claude Claverie, Coubron, France, assignor to Societe Anonyme DBA, Paris, France

Filed Apr. 4, 1979, Ser. No. 27,187
Int. Cl.[3] F16D *65/56*
U.S. Cl. 188—79.5 P **12 Claims**



1. A drum brake comprising two lined shoes which can be urged into frictional engagement with a rotary drum by brake applying means situated between the first ends of the shoes, a fixed fulcrum block situated between the other two ends of the shoes, a spacer mounted between an adjusting lever pivoted on a first one of the shoes and the second shoe, said adjusting lever including a free end, an elongated extensible member situated between the free end of the adjusting lever and the first shoe, said extensible member defining an axis; the extensible member comprising a first element prevented from rotating and a second element, rotation of which causes the member to extend; adjusting means being provided to rotate the second element when the wear on the linings of the shoes exceeds a predetermined value, characterized in that the adjusting means comprise a counter-link pivoted on said adjusting lever and yieldably biased by resilient means into pivotal contact with said spacer, movement of said spacer upon a brake application causing pivotal movement of said counter-link relative to said adjusting lever, a link engaging said counter-link at a pivot and extending between said counter-link and said extensible member, said link terminating in a one end adjacent the free end of said adjusting lever, means for guiding the movement of said one end of said link relative to said free end of said adjusting lever in translation substantially perpendicular to said axis of said extensible member, a one-way coupling drivingly connecting said link to said second element; whereby relative movement of said pair of brake shoes, and said spacer and adjusting lever, upon a brake application causes pivotal movement of said counter-link; said counter-link driving said link to rotate said second element if the lining wear has exceeded said predetermined value.

4,236,612

FRICTION PAD ASSEMBLIES FOR RAIL VEHICLE BRAKES

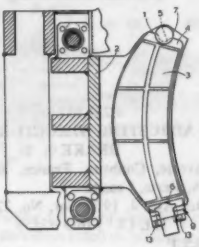
John P. Bayliss, Redditch, England, assignor to Girling Limited, Birmingham, England

Filed Mar. 26, 1979, Ser. No. 23,678

Claims priority, application United Kingdom, Apr. 8, 1978, 13858/78

Int. Cl.[3] F16D *65/04*

U.S. Cl. 188—242 4 Claims



1. A friction pad assembly for a rail vehicle brake comprising a pad of friction material, a rigid backing plate carrying said pad, a shoe upon which said backing plate is detachably mounted, an abutment on said shoe for engagement by said backing plate, a keeper for holding said backing plate in engagement with said abutment, wherein said keeper comprises a stop member adapted to be detachably secured to an end of said shoe and provided with an opening, in combination with a relatively movable resilient abutment member which is secured to said stop member and projects through said opening in said stop member to engage at a free end thereof with an adjacent end of said backing plate, and said abutment member includes a portion which is spaced from said stop member and is of an area greater than said opening to transmit to said stop member any force on said pad which is in excess of the resilient loading of said abutment member.

4,236,613

COUPLING MEMBER

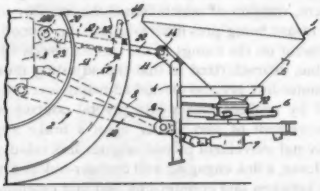
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed May 15, 1978, Ser. No. 905,966

Claims priority, application Netherlands, May 9, 1977, 7705056

Int. Cl.[3] F16F *9/44*

U.S. Cl. 188—300 9 Claims



1. An elongated coupling member of adjustable length for use as a stay or strut, comprising a cylinder and a piston movable within said cylinder, the outer ends of the member mounting couplings and said piston being mounted on a rod, said rod extending through opposite ends of said cylinder and at both sides of said piston, chambers within said cylinder at each opposite side of said piston and the two chambers forming part of a closed hydraulic circuit, the movement of said piston and rod being accompanied by movement of fluid through duct means interconnecting one chamber to the other and a change in the length of said coupling member, valve means in said duct means normally preventing fluid flow and retaining a preselected length of said member, said duct means comprising an overload channel that communicates fluid from one chamber to the other chamber through a check valve upon overload, indicating means in said circuit that signals the fluid pressure in the circuit and said one chamber when the valve means is closed, and the load being sustained by said coupling member, a further channel interconnecting said chambers with one another through at least one further valve to permit adjustment of the length of said member.

4,236,614

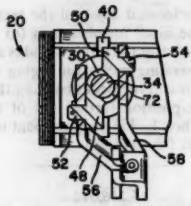
DRUM BRAKE HAVING PARKING MECHAISM

Donald D. Johannesen, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 890,752, Mar. 27, 1978, abandoned. This application Nov. 16, 1979, Ser. No. 95,014

Int. Cl.[3] F16D *51/22, 51/24*

U.S. Cl. 188—326 3 Claims



1. In a drum brake assembly having a brake drum rotatable about an axis and a pair of brake shoes which are movable radially by a hydraulic actuator from a non-braking position to a braking position in engagement with the drum during a service brake application, an extendible assembly having a longitudinal axis and engageable with the pair of brake shoes to substantially define the non-braking position, and a pair of levers secured to the extendible assembly, the pair of levers being pivotal in opposite directions relative to the extendible assembly to move the pair of brake shoes from the non-braking position to the braking position during a parking brake application, the extendible assembly including a pair of projections extending radially therefrom in opposite directions from the extendible assembly to define mountings which are radially offset from each other relative to the drum axis and axially offset from each other in a direction parallel of the drum axis, the mountings pivotally securing the pair of levers to the extendible assembly such that the pair of levers are pivotally secured on opposite sides of the extendible assembly at axially spaced locations.

4,236,615

PACKING CASE HAVING EXPANSIBLE COMPARTMENTS

Esther Ginat, 20 Bruria St., Tel Aviv, Israel

Continuation of Ser. No. 831,991, Sep. 9, 1977, abandoned. This application Dec. 28, 1978, Ser. No. 973,810

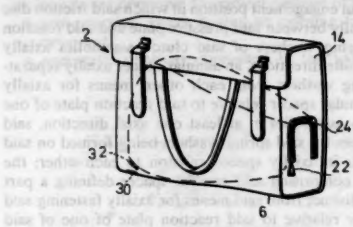
Claims priority, application Israel, Aug. 2, 1977, 52723

Int. Cl.[3] A45F *3/00*

U.S. Cl. 190—52 6 Claims

1. A packing case having an outer wall enclosure defining a main internal compartment therein; said outer wall enclosure being formed with an opening lined with a fastener device for closing same; and an expansible partition of flexible material secured along its peripheral edges to the outer wall enclosure and normally disposed within said main compartment so as to form an auxiliary compartment separate from but expansible within said main compartment and closable by said fastener device, said outer wall enclosure including a top wall, a bottom wall, two side walls, and two end walls, said opening being

formed in and within the perimeter of one of said end walls, said partition being dimensioned such that the expansible auxil-



iary compartment defined thereby is expansible within the main compartment to substantially the full volume of the main compartment.

4,236,616

CURRENT COLLECTOR SHOE

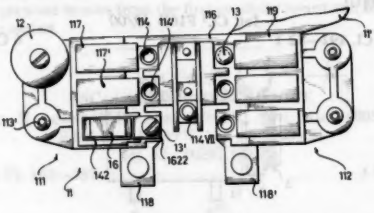
Willi Hillmann, Kamen, Fed. Rep. of Germany, assignor to Paul Vahle KG, Kamen, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,536

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831882

Int. Cl.³ B60L *5/06*

U.S. Cl. 191—59.1 **12 Claims**



1. A current collector shoe traveling along a multi-pole slide wire comprising: sliding contacts projecting sideways, break-out means on lengthwise sides of said shoe, cassettes insertable from either sides, said sliding contacts being spring mounted in said cassettes.

4,236,617

VEHICLES

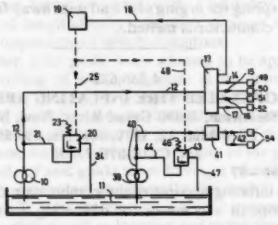
Eric A. Whateley, Huddersfield, England, assignor to David Brown Gear Industries Limited, Huddersfield, England

Filed May 1, 1978, Ser. No. 901,823

Claims priority, application United Kingdom, Nov. 11, 1977, 46963/77

Int. Cl.³ F16D *33/00, 67/00;* **B60K** *41/22*

U.S. Cl. 192—3.3 **16 Claims**



1. In a vehicle including a power transmission mechanism comprising variable-ratio gearing driven by way of a hydrodynamic torque converter having a hydraulically-engaged lock-up clutch which is temporarily disengaged while a ratio is being established in said gearing; friction clutch and/or brake means for establishing a ratio in said gearing; friction brake means for bringing the vehicle to rest; at least one of said ratio-establishing friction clutch and/or brake means and said friction brake means bringing the vehicle to rest being hydraulically engaged and forming part of a hydraulic circuit comprising a pump capable of supplying oil under pressure in the circuit and a relief valve interposed between the pump and that one of said ratio-establishing friction clutch and/or brake means and said friction brake means for bringing the vehicle to rest forming part of said circuit, said relief valve being urged in the closing direction by resilient means, and said relief valve also being interconnected with said lock-up clutch so as to be subject to pilot pressure in said closing direction while said lock-up clutch is engaged.

4,236,618

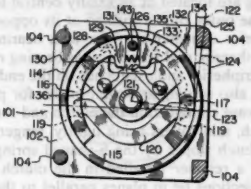
TORQUE TRANSMITTING AND BLOCKING DEVICE

Joe E. West, 11426 Goodnight La., Dallas, Tex. 75229

Filed Oct. 13, 1977, Ser. No. 841,809

Int. Cl.² F16D *67/00*

U.S. Cl. 192—8 R **31 Claims**



1. Apparatus for selectively transmitting torque from a torque input means to a torque output means, and for blocking transmission of torque from said output means to said input means, comprising:

a drum having a cylindrical inner surface;

a pair of shoes positioned within said drum, each of said shoes having an arcuate surface bearing against the inner surface of said drum;

a spanner bar extending between said shoes and engaging their inner surfaces at points lying on the same side of the axis of said drum said spanner bar being so positioned with respect to the drum axis that a perpendicular struck from its centerline at the intersection of the centerline with the inner drum surface forms an angle with a drum inner surface tangent struck from the same point which is in the lock angle range for the materials employed to form the drum and shoe surfaces;

said shoes being displaceable toward each other at their ends lying on the side of the drum axis opposite their points of engagement with said spanner bar;

said shoes having among them at least two force transmitting surfaces oriented generally radially of said drum;

force transmitting means engagable with each of said surfaces;

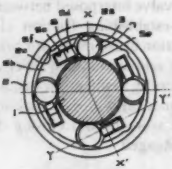
one of said force transmitting surfaces being oriented such that a force applied generally orthogonally therethrough by said force transmitting means sets both of said shoes in jamming relationship with the inner surface of said drum; and

the other of said force transmitting surfaces being oriented such that a force applied generally orthogonally therethrough by said force transmitting means slidingly rotates said shoes within said drum without jamming thereagainst.

4,236,619
ONE-WAY CLUTCH

Masao Kuroda, Mie, Japan, assignor to NTN Toyo Bearing Company, Limited, Osaka, Japan

Filed Oct. 25, 1978, Ser. No. 954,595
Claims priority, application Japan, Oct. 26, 1977, 52-144345
Int. Cl.³ F16D 41/06
U.S. Cl. 192—45 8 Claims

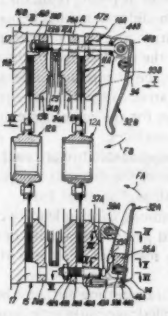


1. A one-way clutch of the type in which rollers are disposed respectively in a plurality of wedge-shaped spaces defined between an outer ring provided with a plurality of clutch slopes on its inner periphery and the cylindrical outer surface of a shaft or inner ring, said rollers being lightly pressed against the wedge surfaces by spring members, the improvement wherein said clutch slopes on the inner peripheral surface of the outer ring are located at an axially central location of the outer ring, the outer ring is formed at its opposite ends with enlarged interior diameter portions with bearing rings being fixedly fitted therein, said bearing rings bearing radial loads on their inner peripheries and axial loads on the end surfaces, said bearing rings also serving as sealing plates for preventing the leakage of grease contained in the clutch and the entry of dirt into the clutch, said rollers being lightly, tangentially pressed against the clutch slopes by the S-shaped spring members so positioned in a retainer installed in the clutch so that their S-shaped projections lie in planes parallel to the longitudinal axes of the respective rollers.

4,236,620
DOUBLE CLUTCH ASSEMBLY

Carlo Beccaris, Santena, Italy, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Jul. 10, 1978, Ser. No. 923,293
Claims priority, application France, Jul. 13, 1977, 77 21605
Int. Cl.³ F16D 21/02
U.S. Cl. 192—48.8 13 Claims

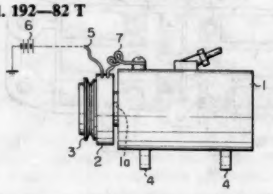


1. A clutch of the kind comprising two clutch assemblies; each of said clutch assemblies including a reaction plate adapted to be fixed for rotation with a shaft, a friction disc mounted for axial movement relative to said reaction plate and adapted to be fixed for rotation with another shaft, a pressure plate mounted for axial movement relative to said reaction plate and fixed for rotation therewith, a Belleville type spring washer bearing along one of its peripheries against a support surface and the other of its peripheries urging said pressure plate toward an engagement position in which said friction disc is gripped axially between said pressure plate and said reaction plate; said spring washers of said clutch assemblies axially acting in opposite directions, an annular spacer axially separating said spring washers from each other, means for axially fixing said annular spacer relative to said reaction plate of one of said clutch assemblies in at least one axial direction, said support surfaces for said spring washers being formed on said annular spacer in axially spaced relation to each other; the improvement comprising said annular spacer defining a part separate and distinct from said means for axially fastening said annular spacer relative to said reaction plate of one of said clutch assemblies, said last mentioned means comprising an annular retaining means, said annular spacer bearing through one of said spring washers against said annular retaining means, said annular retaining means being disposed axially beyond said one spring washer in relation to said annular spacer.

4,236,621
APPARATUS FOR PROTECTING A COMPRESSOR FROM BREAKDOWN

Takamitu Mukai; Tomoo Fujii, and Hiroya Kouno, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Apr. 25, 1979, Ser. No. 33,136
Claims priority, application Japan, Apr. 28, 1978, 53-58500[U]
Int. Cl.³ F16D 19/00
U.S. Cl. 192—82 T 6 Claims



1. An apparatus for protecting a vehicle air conditioning compressor, having therein sliding parts to be lubricated during the operation of said compressor, against breakdown due to seizure of the sliding parts, said compressor being connected to a vehicle engine system via an electromagnetic clutch excited from a vehicle battery, comprising means for preventing said electromagnetic clutch from being excited prior to occurrence of the seizure of said sliding parts of said compressor, said preventing means being a thermally meltable conductor provided in a grounded circuit of an electric excitation circuit for said electromagnetic clutch, said thermally meltable conductor comprising a lead wire disposed adjacent to a body of said compressor, said lead wire having a resilient portion formed into a coil spring for urging said lead wire away from said body when said conductor is melted.

4,236,622
COIN OPERATED TIRE INFLATING APPARATUS

James G. Stevenson, 40890 Grand River, Novi, Mich. 48050

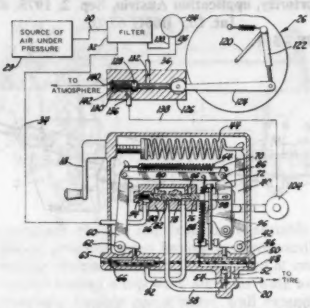
Filed Mar. 12, 1979, Ser. No. 19,769
Int. Cl.³ G07F 17/06
U.S. Cl. 194—87 5 Claims

1. In an inflating apparatus, the combination comprising:
a first conduit and means for delivering air thereto under pressure;
a second conduit for delivering air under pressure to an inflatable object;
valve means connected between the first conduit and the second conduit, said valve means being movable to a first

position for passing air from the first conduit to said second conduit, from a second position in which the valve means are operative to prevent passage of such air;

a coin-operated means having an opening for receiving a coin; and

a pneumatic operator connected to the valve means for



preventing movement thereof from said second position to said first position, and being so connected to the coin-operated means as to be responsive to a motion of the coin with respect to said coin-operated means to pneumatically actuate the first valve means to permit said air under pressure to pass from the first conduit toward said second conduit.

4,236,623

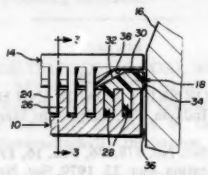
ESCALATOR SAFETY DEVICE

Duane B. Ackert, 25100 Meadowbrook, Novi, Mich. 48050

Filed Dec. 11, 1978, Ser. No. 968,651

Int. Cl.³ B65G *9/12*

U.S. Cl. 198—333 **1 Claim**



1. In escalator construction of the type characterized by step plates adapted to move longitudinally between a pair of stationary longitudinally extending skirt members which function as vertical barriers along the two lateral sides of the escalator, a small clearance gap being provided between each lateral edge of the step plates and the associated skirt member, each of the step plates being provided with a plurality of parallel closely spaced longitudinally extending grooves in its upper surface, the improvement which comprises:

a pair of step plate guide strips adapted to be applied to the upper surface of each step plate at its opposite lateral edges, each guide strip beingdimensioned to extend substantially the full longitudinal length of the step plate and to extend inwardly from the lateral edge of the step plate a sufficient width to overlap a plurality of the grooves, the under side of said guide strips having a plurality of longitudinally extending downwardly projecting ribs dimensioned to fit into said grooves between upstanding ribs of the step plate to aid in locating and stabilizing said guide strip on the step plate, means for securing said guide strip to said step plate, said guide strips projecting upwardly from the top surface of the step plate with the upper surface of each of said guide strips being contoured to slope upwardly at a shallow angle from the horizontal and the laterally inward edge toward the laterally outward edge to form a ramp-like face for at least a substantial part of the lateral width of said strip, wherein the guide strip width is dimensioned so that the clearance gap between the lateral outward edge of the guide strip and the skirt is less than that between the lateral edge of the step plate and the skirt, said strips being fabricated of a plastic material having a low coefficient of friction and a very smooth upper surface to which sticky semi-melted plastic materials will not readily adhere.

4,236,624

APPARATUS FOR ORIENTATING ELONGATED ARTICLES, SUCH AS BODIES OF WRITING PENS

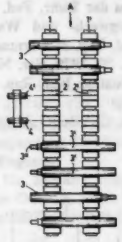
Ugo Buzzi, Arzo Ti, Switzerland, assignor to Albe S.A., Agno, Switzerland

Filed Dec. 5, 1978, Ser. No. 966,560

Claims priority, application Switzerland, Dec. 28, 1977, 16098/77

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—399 **5 Claims**



1. Apparatus for similarly orienting elongated similar rod-like articles whose ends are of different configuration from each other, comprising a step-by-step conveyor which holds the articles individually in parallel relationship, inverting mechanism adapted to receive articles moving in a direction parallel to their length off the conveyor, means for rotating the inverting mechanism 180° about an axis perpendicular to the length of the articles, to turn the articles end for end, first pusher means adapted to push articles lengthwise off the conveyor into said inverting mechanism, said first pusher means being so shaped as to contact the ends of only those articles which are incorrectly oriented and to miss the ends of the articles which are correctly oriented thereby to leave on the conveyor those articles which are correctly oriented, and second pusher means adapted to return the inverted articles from said inverting mechanism to said conveyor.

4,236,625

ARTICLE HANDLING APPARATUS

Stanley Smith, and John R. Harries, both of Worcester, England, assignors to Metal Box Limited, Reading, England

Filed Nov. 27, 1978, Ser. No. 963,758

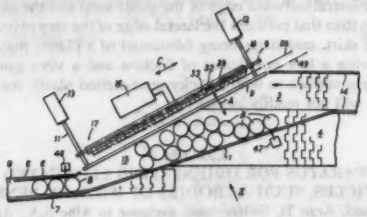
Claims priority, application United Kingdom, Dec. 1, 1977, 50178/77

Int. Cl.³ B65G *47/22*

U.S. Cl. 198—454 **11 Claims**

4. Apparatus for relieving jams which may occur among articles moving along a convergent path of travel comprising a side guide unit adapted to be disposed contiguous to and in part defining a convergent path of travel for a plurality of article, said side guide unit including an elongated side guide rail and an elongated joggling member, said elongated side guide rail and elongated joggling member having respective longitudinal axes, said elongated side guide rail and said elongated joggling

member being disposed adjacent each other with their longitudinal axes in general parallel relationship, first means responsive to article jamming for reciprocating said elongated jogging member generally parallel to its longitudinal axis, and second means responsive to article jamming for moving said elongated side guide rail transverse to its longitudinal axis.



4,236,626

WALKING BEAM CONVEYOR

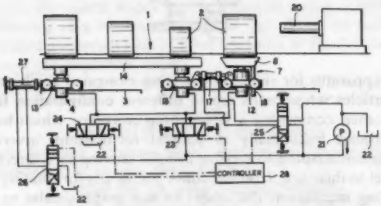
Oskar Noe, Mülheim an der Ruhr, Fed. Rep. of Germany, assignor to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH, Duisburg, Fed. Rep. of Germany

Filed Jan. 29, 1979, Ser. No. 7,608

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2809955

Int. Cl.³ B65G *25/00*

U.S. Cl. 198—488 **5 Claims**



1. A walking-beam conveyor for conveying objects such as sheet-metal coils, said conveyor comprising:

a pair of generally parallel horizontally extending and generally fixed beams;

at least one horizontally extending movable beam generally parallel to and between said fixed beams and having a main portion and an end portion having respective upper sides;

a horizontally extending support underneath said portions;

a main carriage supporting said main portion on said support for horizontal displacement thereon;

an end carriage independent of said main carriage and supporting said end portion for horizontal displacement on said support;

means for horizontally reciprocating said portions of said movable beam jointly through respective predetermined horizontal strokes;

means for vertically reciprocating said main portion;

means operatively engaged horizontally between said end carriage and said main carriage for horizontally displacing said end portion independently of and relative to said main portion; and

means for vertically displacing said end portion independently of and relative to said main portion through a predetermined vertical distance substantially greater than said vertical stroke.

4,236,627

CUTTING MACHINE

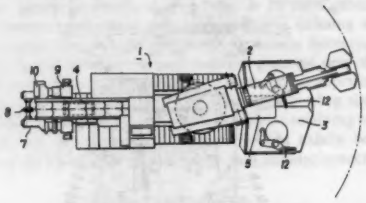
Siegfried Sigott, Zeltweg; Peter Kogler, Knittelfeld; Otto Schetina, and Alfred Zitz, both of Zeltweg, all of Austria, assignors to Vereinigte Österreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed Aug. 31, 1976, Ser. No. 719,157

Claims priority, application Austria, Sep. 2, 1975, 6770/75

Int. Cl.³ B65G *65/02*

U.S. Cl. 198—514 **5 Claims**



1. A cutting machine comprising conveying machinery formed of an endless conveyor extending between a rear deflector wheel and a front deflector wheel; a loading ramp having movable loading arms which continuously shift the cut material in upward direction of the loading ramp to the conveyor, the rear deflector wheel of the conveyor being driven by a squirrel-cage motor and the drive of the loading arms being derived, via the conveyor from the front deflector wheel; a slipper clutch interpositioned within the drive between the motor and the loading arms, the slide torque of said slipper clutch, as reduced to the motor shaft exceeding, the breakdown torque of the squirrel-cage motor.

4,236,628

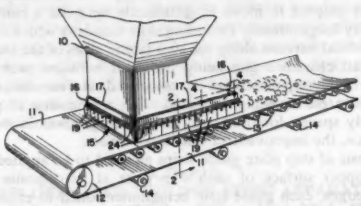
CONVEYOR SKIRT BOARD AND HOLDER

Richard Stahura, Indiana, Pa., assignor to Martin Engineering, Neponset, Ill.

Continuation of Ser. No. 878,236, Feb. 16, 1978, abandoned. This application Aug. 23, 1979, Ser. No. 69,163

Int. Cl.³ B65G *47/04*

U.S. Cl. 198—525 **10 Claims**

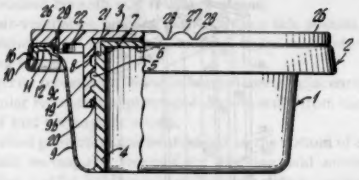


1. A skirt board installation for a conveyor having a travelling belt including a mounting plate secured on the vertical walls of a conveyor loading chute, a plurality of skirt board sections capable of contacting said belt, means individually and adjustably mounting said skirt board sections on said mounting plate to permit adjustment of each section toward said belt and to retard movement of each section away from said belt, and said skirt board sections each including generally vertical slides and guideways along their adjoining edges allowing for said adjustment and said movement.

4,236,629
NESTABLE POURING SPOUT ASSEMBLY

Davis B. Dwinell, Warren, N.J., assignor to American Flange & Manufacturing Co. Inc., Linden, N.J.

Filed Oct. 2, 1978, Ser. No. 947,942
Int. Cl.³ B65D 25/44
U.S. Cl. 222—529 4 Claims

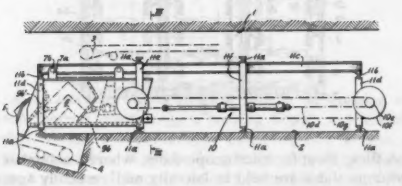


1. In container closure construction a nestable integrally molded plastic pouring spout having a downwardly opening annular sealing channel peripherally disposed at one end, said sealing channel having a top wall, an outer wall, and an inner wall, a relatively flexible spout outer wall extending downwardly from said sealing channel inner wall, a relatively rigid exteriorly threaded spout inner wall connected to the lowermost end of said spout outer wall and concentrically nested therewithin with said spout in stored position, an imperforate sealing membrane closing off the distal end portion of said spout inner wall, an annular metal crimping ring at least partially overlying said top, inner, and outer walls of said spout sealing channel, an integrally molded plastic cap having a top and an internally threaded depending skirt threadedly engaged on said spout, said cap top extending circumferentially of said skirt so as to close off the annular void between said nested inner and outer walls, means depending from the periphery of said cap top tightly engaging said crimping ring with said spout in stored position and gripping means on said cap for raising said spout to extended pouring position by reversing said spout outer wall from a downwardly extending direction to an upwardly extending direction.

4,236,630
EXTENSIBLE TELESCOPIC COAL BUNKER FOR SUBSURFACE MINING

Günter Sander, Bottrop, and Roland Günther, Wesel, both of Fed. Rep. of Germany, assignors to Gutehoffnungshütte Sterkrade Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 803,255, Jun. 3, 1977, abandoned. This application Sep. 20, 1978, Ser. No. 943,975
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626408
Int. Cl.³ B65G 3/04
U.S. Cl. 198—577 11 Claims

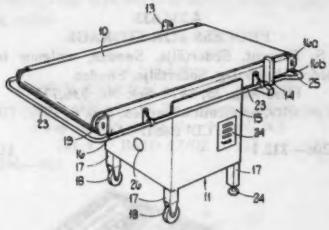


1. A bunker assembly for receiving and discharging bulk materials, particularly coal for subsurface mine hauling, comprising: an assemblage of nested telescopic container members, including at least one stationary member and a plurality of movable members, said container members being formed in graduated sizes with each container member being adapted to be fitted into a next larger adjacent container member, said movable members being telescopically movable relative to said stationary member and to each other to expand and contract the volume of said assemblage; means for feeding material into said assemblage and means for discharging material from said assemblage; frame means for fixedly supporting said assemblage within a subsurface mine location; and reversible drive means mounted upon said frame means for effecting reversible telescopic movement of said movable container members to vary the volume of said assemblage, said drive means comprising gear wheel means and pulley means rotatably fixed relative to each other, cable means in driving engagement with said pully means and having said movable container members connected thereto, gear chain means in driving engagement with said gear wheel means to effect rotation thereof, and reversible hydraulic cylinder means having said gear chain means connected thereto and operating to effect reversible rotation of said gear wheel means, said hydraulic cylinder means thereby operating to reversibly drive said movable container members to expand and contract the volume of said assemblage.

4,236,631
CONVEYOR UNIT

David Bowen, Birmingham, and David Boot, West Midlands, both of England, assignors to The Lucas Electrical Company, Ltd., Birmingham, England

Continuation of Ser. No. 576,657, May 12, 1975, abandoned. This application Oct. 19, 1976, Ser. No. 733,775
Claims priority, application United Kingdom, May 18, 1974, 22274/74
Int. Cl.³ B65G 41/00
U.S. Cl. 198—583 13 Claims

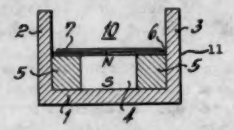


1. A conveyor unit comprising a conveyor, a mobile support carrying said conveyor, a conveyor drive carried by said mobile support, a control for said conveyor drive, said control including means for sensing the presence of an article on a predetermined region of said conveyor, so that said conveyor drive is started and stopped in dependence upon signals from said sensing means, at least one service connection carried by said mobile support, and connection means carried by said mobile support at the ends and at the sides of said conveyor unit for quick connection and disconnection of another such conveyor unit selectively at either end and at either side therof, said connection means including a location bar surrounding said conveyor, said location bar having a downwardly-cranked end portion adjacent one end of the conveyor unit, wherein said mobile support includes a notched portion adjacent said downwardly-cranked end portion of said location bar, means defining a notch in said notched portion being arranged to engage a location bar on an adjoining, similar conveyor unit.

4,236,632
MAGNETIC CONVEYOR BELT

Heinrich Spodig, Netteberge 84, 4711 Bork, Fed. Rep. of Germany

Continuation of Ser. No. 458,351, Apr. 5, 1974, abandoned. This application Dec. 29, 1976, Ser. No. 755,205
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1973, 2318900
Int. Cl.[3] B65G *15/58*
U.S. Cl. 198—690 11 Claims

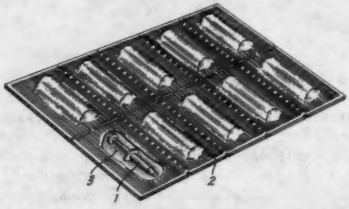


1. A magnetic conveyor belt comprising:
(a) a belt supporting structure comprising a magnetically conductive iron rail of U-shaped cross section having a base web portion and first and second side legs;
(b) a plurality of permanent magnets disposed along the length of said rail in spaced fashion with the same pole of each magnet resting against the web of said iron rail;
(c) means supporting a conveyor belt for travel directly above the top surface of said permanent magnets at which surface the other pole of each of said magnets is present; and
(d) the top of said conveyor belt being substantially below the height of said side legs of said U-shaped iron rail to result in a magnetic field extending over a large volumetric space between said side legs and said top surface, in which space objects being carried on the belt will be located, to thereby result in magnetic lines of force intersecting objects carried on said conveyor belt thereby permitting bulky objects to be reliably carried.

4,236,633
PROCESS FOR STORAGE

Lennart S. Ernerot, Södertälje, Sweden, assignor to Astra Lakemedel Aktiebolag, Södertälje, Sweden

Filed Aug. 25, 1978, Ser. No. 936,772
Claims priority, application Sweden, Sep. 6, 1977, 7709970
Int. Cl.[3] B65D *81/24*
U.S. Cl. 206—213.1 11 Claims

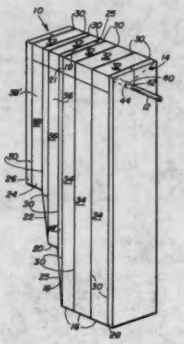


1. Package for the protection of oxidizable compounds selected from the group consisting of adrenaline, noradrenaline and derivatives thereof which are present in pharmaceutically active solutions containing a local anesthetically active compound, which solutions are stored in a container which is further enclosed in an oxygen gas impervious outer package containing hydrogen gas and a catalyst which catalyzes the reaction of hydrogen and oxygen into water present in the space between said container and said outer package.

4,236,634
GARMENT STORAGE BAG

Gertrude B. Benedict, 2546 Edison, Detroit, Mich. 48206

Filed Feb. 16, 1979, Ser. No. 12,844
Int. Cl.[3] B65D *85/18*
U.S. Cl. 206—287 8 Claims

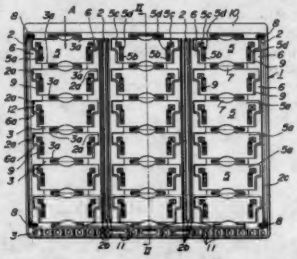


1. A garment storage sectional container including a plurality of sectional structures of varying length in open communication with each other supported by a longitudinally extending support rod, comprising:
a frame means for supporting the sectional structures above the support rod;
said sectional structure further comprising a plurality of top members open at their ends supported by the frame means; and
said structure further comprising a plurality of lower sections open at their ends supported by the top members.

4,236,635
FILING SHEET FOR MICROSCOPE SLIDES

Naokuni Namiki, Hoya, Japan, assignor to Slidex Corporation, Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,751
Claims priority, application Japan, Jun. 2, 1978, 53-75673[U]; Jun. 2, 1978, 53-75674[U]
Int. Cl.[3] B65D *1/24, 5/50, 85/62*
U.S. Cl. 206—456 12 Claims



1. A filing sheet for microscope slides, wherein a number of microscope slides are held in laterally and vertically spaced relationship on the same plane of an integral sheet, comprising:
a unitary plastic sheet having a plurality of rectangular recesses depressed from the outer periphery and spaced apart by longitudinal partition walls and lateral partition walls in lateral and longitudinal relationship, each of said rectangular recesses being defined by a pair of longitudinal partition walls and a pair of lateral partition walls for receiving a microscope slide;

microscope slide-retaining means projected inwardly into said rectangular recess from a shorter pair of opposing side walls which define said rectangular recess and having a space for inserting a microscope slide between the end of said slide-retaining means and an opposite lateral partition wall and being arranged so as to be inclined downwardly toward the bottom of the recess such that said slide is retained beneath said retaining means;

an air-ventilation opening provided on a side portion of the plane of said rectangular recesses under said slide-retaining means;

fingertip recesses provided in borderlines of adjacent rectangular recesses and protruded downwardly from the plane of said rectangular recess;

upraised projection means arranged on the bottom of each of said rectangular recesses for abutting said microscope slide and for holding said microscope slide in contact with said microscope slide-retaining means and being located on the periphery of said slide adjacent said side walls;

spacer means protruded downwardly from portions of the back surface of a bottom wall of said rectangular recess and being located on the periphery of said slide adjacent said side walls so as not to disturb viewing of a microscope slide; and

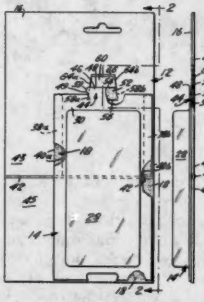
a plurality of lateral partition walls projected inwardly toward said fingertip recess and having a substantially same protrusion height with the microscope slide retaining means.

4,236,636

BLISTER PACKAGE

Morris W. Kuchenbecker, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed May 18, 1979, Ser. No. 40,100
Int. Cl.³ B65D *83/00, 65/16, 75/58*
U.S. Cl. 206—461 **10 Claims**



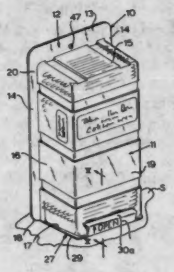
1. A recloseable blister package having an opening end defined thereon comprising: a backing board; and a blister member, with a product-holding portin defined therein, secured to one surface of said backing board, said blister member having a peripheral flange extending thereabout, with a flexible locking tab projecting, at least in part, outwardly beyond the edge of a portion of said flange at one end of said blister corresponding to said opening end of said package, said tab being bonded in surface contact to an underlying, displaceable, securing segment of said backing board, said package, when opened, having an aperture in said backing board in registry with said tab, said tab being adapted to be pushed through said aperture to effect locking reclosure of said package.

4,236,637

COTTON SWAB VENDER

J. Fred Castner, Sr., P.O. Box 7156, San Diego, Calif. 92107, and John F. Castner, Jr., Torrance, Calif., assignors to J. Fred Castner, Sr., San Diego, Calif.

Filed Jun. 18, 1979, Ser. No. 49,631
Int. Cl.³ B65D *83/02, 85/20*
U.S. Cl. 206—467 **18 Claims**



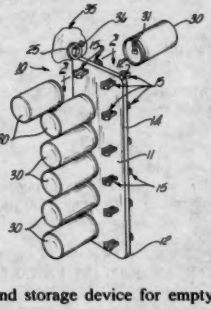
1. A package for marketing and vending products carried on strips stacked in the package which comprise a tray-like blister with a front face, a top end, a bottom wall and side walls for housing the strips, a backing covering and sealed to said blister extending above the top end of the blister and having an aperture therein adapted to receive a hook to hang the package from a wall, said package having a dispensing outlet at the bottom wall of the blister, and a flap on said backing folded over said outlet and across the bottom wall of the blister, a tongue portion on said flap foldable over the front face of the blister, tongue retaining grooves in the blister having openings into the front face of the blister and said flap forming a flat bottom wall under the bottom wall of the blister supporting said package in an upright position when said tongue is tucked into said groove openings whereby said flap is held in a closed position over said outlet by tucking the tongue thereof into said groove openings and is pulled to an open position exposing the dispensing outlet.

4,236,638

EMPTY BEVERAGE CAN CARRIER

Dwight N. Griffith, 4451 N. 15 Rd., Mesick, Mich. 49668

Filed Jul. 25, 1979, Ser. No. 60,262
Int. Cl.³ B65D *67/02, 85/62*
U.S. Cl. 206—493 **7 Claims**



1. A carrier and storage device for empty beverage cans comprising:

a substantially planar body of rigid material having two opposite, flat sides;

a plurality of elastically deformable, spaced projections integral with and extending horizontally from each of said sides;

each of said projections being insertable into the opening of an empty beverage can whereby said can is temporarily secured to the body by the compression of the projection as it passes through the opening followed by expansion of the projection after insertion.

4,236,639

METHOD OF AUTOMATICALLY SORTING THIN SHEET ARTICLES

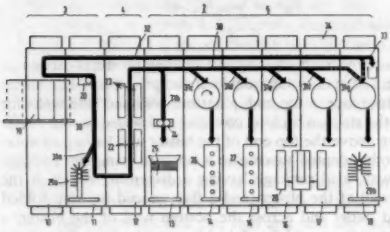
Horst Boettge, Gartenberg; Wilhelm Mitzel, Neu-Keferloh; Herbert Bernardi, Haag; Josef Geier, Munich; Norbert Osswald, Hochbruck; Gerd von Aschwege, and Robert Schaetz, both of Munich, all of Fed. Rep. of Germany, assignors to G.A.O. Gesellschaft für Automation und Organisation mbH, Fed. Rep. of Germany

Filed Jan. 5, 1978, Ser. No. 867,011

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1977, 2729830

Int. Cl.[3] **B07C** *5/342*

U.S. Cl. 209—534 **42 Claims**



1. A method of automatically sorting thin sheets, such as paper bank notes, in packets, having a stack of the sheets which may include regular and irregular sheets bound by an associated band carrying specific information, of the type having the steps of withdrawing each sheet from the stack, testing each sheet according to different criteria, assigning a regular or irregular category to each sheet on the basis of a test result of the testing, directing each sheet to one of a plurality of respective target locations which is associated with at least one category assigned to the respective sheet, and separately directing the band to one of the target locations, comprising:

(a) mechanically separating the stacks and the bands;

(b) mechanically conveying the bands separately from the stacks;

(c) conveying each of the sheets over a sheet feed path to one of the target locations and conveying the band over a band feed path to a dwell position within the band feed path;

(d) maintaining the band at the dwell position within the band feed path for a period of time approximately corresponding to the time period for directing each sheet of the stack associated therewith to the respective target locations;

(e) collectively depositing the band of each packet having no irregular sheets; and

(f) mechanically reuniting sheets categorized as irregular with the band of the stack associated therewith.

4,236,640

SEPARATION OF NAHCOLITE FROM OIL SHALE BY INFRARED SORTING

John H. Knight, Aurora, Colo., assignor to The Superior Oil Company, Houston, Tex.

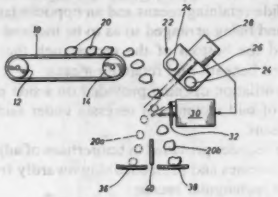
Filed Dec. 21, 1978, Ser. No. 971,647

Int. Cl.[3] **B07C** *5/342;* **C01D** *7/22;* **C10G** *32/02*

U.S. Cl. 209—587 **10 Claims**

1. A process for separating nahcolite-containing ore particles from oil shale particles in a mixture of particles of nahcolite-bearing oil shale ore, comprising the steps of:

irradiating the mixture of ore particles with infrared electromagnetic energy;



sensing the intensity of the electromagnetic energy reflected from the particles at a selected wavelength between about 0.7 and about 40 microns; and

sorting the particles responsive to the sensed reflected energy to separate the nahcolite-containing ore particles from the oil shale particles.

4,236,641

FRAME FOR SECURING ELECTRICAL, MECHANICAL OR PNEUMATIC DEVICES HAVING A BASE MEMBER FITTED WITH HOOKING MEANS

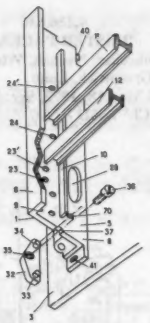
Jacques Marcenne, Poitiers, France, assignor to La Telemecanique Electrique, France

Filed Mar. 14, 1978, Ser. No. 886,506

Claims priority, application France, Mar. 14, 1977, 77 07531

Int. Cl.[2] **A47F** *7/00*

U.S. Cl. 211—87 **6 Claims**



1. A mounting for fixing electrical, mechanical or pneumatic equipment contained in boxes having base plates and means for hooking said base plates on carrier rails having parallel edges, said mounting including two uprights mounted on a wall, said carrier rails forming cross-pieces mounted parallel to each other between said two uprights, each cross-piece being a portion of section in the general shape of a T, having two end faces each having at least one perforation which is parallel to the longitudinal direction of the section, wherein each upright includes a plane leg at right angles to said direction and first and second parallel wings pointing towards the other upright and positioned at increasing distances from the wall, first and second sets of holes in said leg, the first and second sets of holes being respectively distributed on first and second lines arranged between the said first and second wings and parallel thereto, said lines of holes being so positioned that, when fixing parts are put through the holes of the first set and into the perforations of a cross-piece, the top surface of the said cross-piece is applied against the surface of the second wing and when the fixing parts are put into the holes of the second set and into the perforations of a cross-piece, the bottom surface of

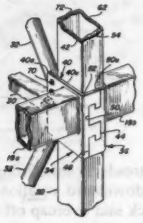
the base of the said cross-piece is applied against the surface of the first wing.

4,236,642

CONNECTOR ASSEMBLY FOR A STORAGE RACK

Herbert H. Klein, Arlington Heights, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Mar. 2, 1978, Ser. No. 882,734
Int. Cl.³ A47F 5/00
U.S. Cl. 211—207 **20 Claims**



1. A connector assembly for connecting a pair of generally elongated horizontal beams of adjacent storage rack sections to an upright imperforate post, comprising:

a first generally planar support plate extending entirely across and fixedly secured to an end of one of said beams, said first support plate being positioned generally perpendicular to the length of said beam;

a second generally planar support plate extending entirely across and fixedly secured to an end of the other of said beams, said second support plate being positioned generally perpendicular to the length of said other beam;

a first set of gripping fingers extending longitudinally from said first support plate in a direction generally towards the second beam;

a second set of gripping fingers extending longitudinally from the second support plate in a direction generally towards the first beam for interlockingly engaging and gripping said first set of fingers to substantially prevent said connector assembly from being pulled apart when said beams are under load;

said first and second set of fingers each having a generally planar back surface lying in generally coplanar relationship to each other for abuttingly engaging and substantially lying flush against a common outer face of said imperforate post; and

removable fastening means extending between and connecting said first and second support plates for compressively fastening said first and second support plates to said imperforate post.

4,236,643

VEHICLE STABILIZER ASSEMBLY

Floyd A. Schmitz, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

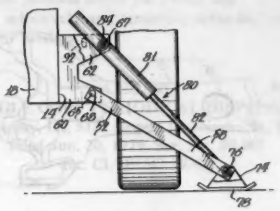
Filed Sep. 14, 1978, Ser. No. 942,326
Int. Cl.³ B60S 9/00
U.S. Cl. 414—694 **9 Claims**

1. A stabilizer assembly for a vehicle having a frame comprising:

bracket means including a pair of spaced apart plates rigidly secured to and extending laterally outward from said frame, said plates defining an opening therebetween, and each plate having apertures defining first and second pivot axes extending across said opening;

a stabilizer arm having a fixed end pivoted on said first pivot axis for movement between a ground engaging support position and a generally upright transport position, and a movable end opposite said fixed end;

fluid ram means having pivot pins extending outwardly in opposite directions from an intermediate portion of said fluid ram means and received into said apertures defining said second pivot axis, so that said fluid ram means is pivotally trunnion mounted in said opening, said fluid ram means also having a free end; and



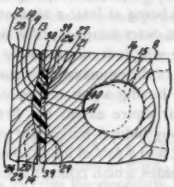
connection means operatively connecting a free end of said fluid ram means to said movable end of said stabilizer arm for moving said stabilizer arm between said support and transport positions.

4,236,644

WEARPLATE FOR THE BUTT END OF A COUPLER SHANK

Kenneth L. DePenti, Mayfield Heights, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Continuation of Ser. No. 891,743, Mar. 30, 1978, abandoned.
This application Feb. 15, 1980, Ser. No. 121,931
Int. Cl.³ B61G 7/10
U.S. Cl. 213—62 R **9 Claims**



1. A car coupler, comprising:

(a) a coupler head with coupler means;

(b) a shank extending from the coupler head and terminating at a butt end having a configured recess disposed therein and extending inwardly of the shank in the direction of the coupler head;

(c) a replaceable wearplate disposed in the recess and having a spherical, convex outer surface which projects outwardly of the butt end of the shank and covers and seats against a concave surface of an adjacent front follower, the wearplate being a polyethylene having an ultra high molecular weight of from 2,000,000 to 10,000,000, the wearplate being generally shaped like the cap of a mushroom and having a short-length circumferential edge which is inclined at an angle to the center axis of the wearplate so that lines containing the edge converge in a direction away from the butt end of the shank and coupler head; and

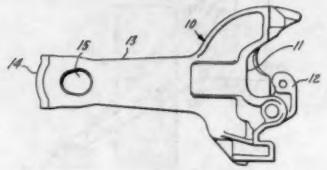
(d) means coacting between the shank and wearplate for frictionally holding the wearplate in the recess, including in the recess a matingly inclined cylindrical inner periphery which frictionally engages the circumferential edge of the wearplate.

4,236,645

WEARPLATE FOR A COUPLER SHANK PINHOLE

Kenneth L. DePenti, Mayfield Heights, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Mar. 30, 1978, Ser. No. 891,742
Int. Cl.[3] B61G 9/20
U.S. Cl. 213—69 7 Claims



1. A car coupler, comprising:

(a) a shank having a butt end adjacent which is located a pinhole that extends transversely through the shank for receiving a pivot pin on which the shank is pivotally mounted, the pinhole including an elongated recess which is disposed in the backside of the pinhole closest the butt end of the shank and which extends longitudinally of the pinhole, the recess, relative to the butt end, having a concave inner periphery which has a simple radius of curvature, the recess having a pair of opposing ends defining a first pair of abutments continuously therealong and a pair of longitudinally extending opposing sides defining a second pair of abutments continuously therealong; and

(b) a replaceable wearplate disposed in the recess between the butt end of the shank and pivot pin extending through the pinhole, the wearplate being resilient so that opposing longitudinal sides thereof are capable of being resiliently deflected towards each other so that the wearplate can be inserted in the pinhole and sprung into the recess, the wearplate being at least a segment of a hollow cylinder, the convex outer periphery of which has a simple radius of curvature which is substantially equal to the radius of curvature of the concave inner periphery of the recess, the wearplate having a pair of opposing ends which contact along their entire extent the first pair of abutments to restrict longitudinal movement of the wearplate within the recess, and a pair of longitudinally extending opposing marginal sides which contact along their entire extent the second pair of abutments to restrict rotational movement of the wearplate within the recess about the longitudinal axis of the pinhole, the wearplate having a uniform thickness between opposing marginal sides thereof.

4,236,646

CLOSURE FOR PHARMACEUTICAL CONTAINERS

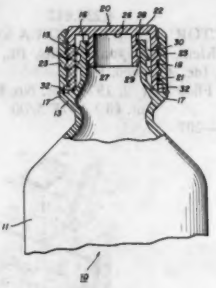
Rudolf V. Ganz, Jr., Ebmatingen, Switzerland, and David A. Winchell, Twin Lakes, Wis., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 956,832, Nov. 2, 1978, abandoned. This application Oct. 19, 1979, Ser. No. 86,545
Int. Cl.[3] B65D 41/32
U.S. Cl. 215—232 10 Claims

1. An improvement in a hermetically sealed container for storing and dispensing sterile liquids, said container including a bottle with a neck defining an externally threaded dispensing outlet, said bottle having a transverse abutment means on the neck surrounding the outlet, said improvment comprising, in combination:

a cup-shaped overcap having a cylindrical side wall and a top wall over the dispensing outlet, with said overcap being hermetically bonded to the bottle neck;

wiper seal means carried by said overcap and engaging the dispensing outlet to prevent liquid flow out of the dispensing outlet until the overcap is removed; and



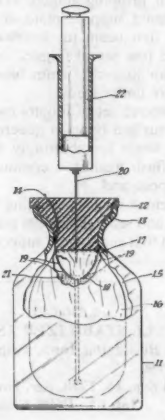
an outer ring threadedly interfitting over said overcap and adapted for downward rotation to abut said abutment means and jack said overcap off said bottle neck.

4,236,647

CONTAINER FOR STERILE LIQUIDS

Paulson A. Kotturan, 520 N. 72nd Ave., Hollywood, Fla. 33024

Filed Jan. 15, 1979, Ser. No. 3,776
Int. Cl.[3] B65D 39/00
U.S. Cl. 215—247 4 Claims



1. A container, comprising:

an outer rigid container having an opening therein,

a resilient stopper means for plugging said opening in said outer container,

a flexible bag held within said rigid container, and

a means for allowing the outer atmosphere to flow between the outer environment and the area between said outer container and said bag, and

a shield means extending between said stopper and said bag, said shield means having a multiplicity of openings therein.

4,236,648

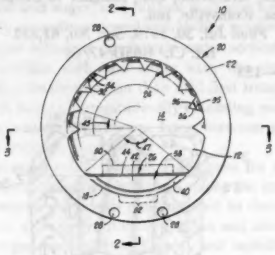
SAFETY PRESSURE RELIEF APPARATUS

Loren E. Wood; Calvin C. Forsythe, both of Tulsa; John L. Strelow, Broken Arrow; Edward H. Short, III; Jerome D. Allen, both of Tulsa, and Miner E. Clift, Broken Arrow, all of Okla., assignors to Black, Sivalls & Bryson, Houston, Tex.

Filed Mar. 5, 1979, Ser. No. 17,198

Int. Cl.³ B65D *25/00*

U.S. Cl. 220—89 A **22 Claims**



1. A safety pressure relief apparatus comprising:

a reverse buckling rupture disk including a concave-convex portion connected to an annular flat flange portion by a curved transition connection; and

a support member having an annular flat flange portion engaging said annular flat flange portion of said rupture disk for supporting said transition connection thereof, said support member including a partially circular cutting edge positioned interiorly of said transition connection and also including a non-cutting interior edge, said cutting and non-cutting interior edges forming an opening in said support member so that when said concave-convex portion of said rupture disk reverses itself, said cutting edge partially severs said disk whereby a partially severed portion of said disk bends about an integral unsevered portion of said disk and passes through said opening in said support member.

4,236,649

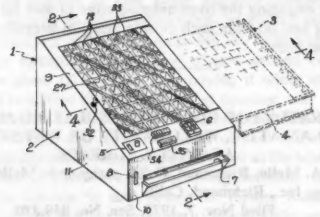
COMPACT VENDING MACHINE

Van N. Fellner, 26661 Byron Ave., Granada Hills, Calif. 91344, and Frank Ruskin, 1390 Newton St., Los Angeles, Calif. 90021

Filed Apr. 6, 1979, Ser. No. 27,906

Int. Cl.³ G07F *11/38*

U.S. Cl. 221—90 **5 Claims**



1. A vending machine which comprises:

a generally horizontal base plate having a plurality of openings cut therethrough;

a plurality of doors for closing each of the openings independently of one another;

latching means for holding each door in a closed position across each opening;

a removable loading magazine having, in its upright position, side walls, a transparent bottom and a plurality of partitions between said walls forming an array of open slots, each slot being dimensioned and shaped to hold a sellable item which comes to rest above one of the doors as the magazine is mounted upside down above said base plate;

a chute under said openings shaped and dimensioned to funnel said item falling through any one of said openings toward a distribution station;

a box-like frame for mounting the base plate in a generally horizontal position above the chute; and

means for selectively and randomly releasing said latching means for holding.

4,236,650

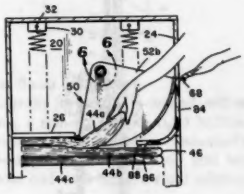
SINGLE COPY PERIODICAL DISPENSER

Frank W. Medley, III, 5121 Regent Dr., Nashville, Tenn. 37220

Filed Jun. 20, 1979, Ser. No. 50,307

Int. Cl.³ B65G *59/02*

U.S. Cl. 221—226 **10 Claims**



1. A dispensing apparatus for dispensing individual ones of a stack of flexible, layered articles including a first article, and adjacent articles comprising a housing, an access opening defined in said housing, said opening being adapted to permit individual withdrawal of said articles by an operator, magazine means for locating said first article in a position adjacent to said access opening and scoop means pivotally mounted adjacent to said access opening, said scoop means being pivotable from a closed position closing said access opening, passing between said first article and said adjacent articles, to an open position permitting access to said first article through said access opening and preventing access to adjacent articles.

4,236,651

DISPENSER DEVICE WITH VALVE PISTON PUMP

Walter Meyer, Triengen, and Anton J. Bara, Büron, both of Switzerland, assignors to Trisa Bürstenfabrik A.G., Triengen, Switzerland

Continuation of Ser. No. 801,421, May 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 704,939, Jul. 13, 1976, Pat. No. 4,068,974. This application Aug. 17, 1979, Ser. No. 67,288

Claims priority, application Switzerland, Jun. 8, 1976, 7184/76

Int. Cl.³ B67B *7/24;* **B67D** *5/42*

U.S. Cl. 222—82 **24 Claims**

1. A dispenser device for dosed dispensing of a fluent material, comprising:

reservoir means for containing the fluent material;

a piston pump having a cylinder part and a piston part which are movable relative to one another for selectively performing a suction stroke and a dispensing pumping stroke;

a valve arrangement having an inlet valve and an outlet valve;

said outlet valve being arranged in the piston part and said inlet valve being arranged in the cylinder part;

each valve having a closure member, the two closure members being connected with one another by a valve stem for common actuation in the same direction;

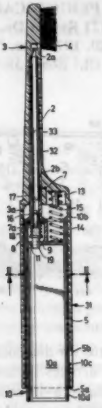
said two closure members together with the valve stem forming a valve body;

each closure member coacting with a valve seat arranged at the cylinder part and the piston part, respectively;

a first spring means, arranged between the closure member of the inlet valve and one end of the piston part, for bearing at one end against said closure member of the inlet valve and at the other end against said one end of the piston part;

said first spring means, in the rest condition of the piston pump, maintaining said outlet valve closed and being compressed after closing of the inlet valve for keeping the inlet valve closed;

said reservoir means having an outlet opening means for forming the valve seat of the inlet valve;



said cylinder part of the piston pump being in fluid flow connection with the reservoir means and having a cylinder chamber communicating with said outlet opening means;

said valve body being coupled with the piston part of the piston pump and being displaceable relative thereto against the pressure of said first spring means during said dispensing pumping stroke; and

a second spring means acting between said piston part and said cylinder part for resiliently moving the piston part and the cylinder part relative to one another during the suction stroke.

4,236,652

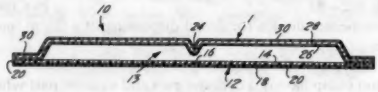
DISPENSER PACKAGE

Gordon H. Beguhn, Westport, Conn., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 20, 1979, Ser. No. 22,113

Int. Cl.[3] **B65D** *35/00*

U.S. Cl. 222—92 **14 Claims**



1. A dispensing package for a flowable product comprising a flexible top member having at least one layer and secured to a rigid or semi-rigid base member at marginal edge portions to form a pocket, for containment of a flowable product, said base member comprising an outer layer having a cut score area and an imperforate, uniaxially oriented polymeric film attached to the outer surface of the second layer, the imperforate film being oriented to the extent that it exhibits a tear strength differential between the orientation direction and the direction perpendicular to the orientation direction, the oriented film being so positioned on said rigid or semi-rigid member that the orientation direction of the film extends substantially parallel to the cut score area, whereby said score area and said imperforate film rupture to open the package upon bending the base member in a direction toward the pocket.

4,236,653

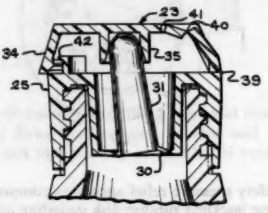
CHILD-RESISTANT DISPENSING CLOSURE

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Jul. 30, 1979, Ser. No. 61,832

Int. Cl.[3] **B65D** *47/08*

U.S. Cl. 222—153 **12 Claims**



1. A child-resistant dispensing closure for a container, said closure and said container having means for retaining said closure on said container, said closure consisting of

(a) a cup-shaped body consisting of an annular skirt and a generally disc-shaped top,

(b) means providing a central dispensing opening in said top,

(c) a generally saucer-shaped lid having means on its underside that is adapted to close said dispensing opening when said lid is in closing position closely overlying said top, said lid being of such size and shape that no part of said lid over-hangs said top of said body in such position,

(d) a flexible hinge web connecting said lid to said body at adjacent edges thereof, said web having a length sufficient to provide for (1) angular movement of said lid relative to said body from such closing position with said closing means closing said opening providing means and (2) lateral translatory movement relative to said body from such closing position a distance sufficient that the lower edge of said lid over-hangs the edge of said top of said body, and

(e) co-operating child-resistant catch means on said lid and said body consisting of horizontal lips on said body and on said lid which are engaged when said lid is in such closing position overlying said body and which are disengagable by engaging the over-hanging edge of said lid after moving said lid from such closing position laterally relative to said body.

4,236,654

APPARATUS FOR BLOWING INSULATING MATERIAL INTO AN ATTIC, WALL CAVITY OR WET SPRAYING AGAINST A SURFACE

Frank A. Mello, Richmond, Calif., assignor to Mello Manufacturing, Inc., Richmond, Calif.

Filed Nov. 7, 1977, Ser. No. 849,320

Int. Cl.[3] **B65G** *53/40*

U.S. Cl. 222—238 **2 Claims**

1. In a device of the type described:

(a) a hopper for receiving a cellulose material and having vertical spaced apart side walls with an outlet opening in one of the walls and disposed adjacent one end of said hopper;

(b) a beater and cellulose feeder rotatably mounted on a horizontal axis in said hopper and positioned near the hopper side wall not having the outlet opening therein;

(c) an auger rotatably mounted in said hopper on a horizon-

tal axis positioned below the axis of said beater, said auger placed adjacent to the hopper side wall having the outlet opening therein, and the axis of said auger paralleling the axis of said beater;

(d) said hopper having a bottom wall with a longitudinally extending first portion underlying said beater, concave in cross section to form a trough whose axis coincides with said beater axis so that the beater in operation will continually remove cellulose material from the trough and force it toward said auger; said bottom wall also having a longitudinally extending second trough-like portion underlying said auger which is concave in cross section and whose axis coincides with said auger axis, the second trough being at a lower position than said first trough, said bottom wall having a longitudinally extending middle portion convex in cross section and lying between said first and second concave portions;

(e) said beater having paddles and means for rotating said beater for causing the paddles to sweep the interior of said first concave portion of cellulose and to throw the cellulose over the convex middle portion and into said auger;

(f) said auger having spaced apart and radially extending blades whose faces extend at a 45° angle and forming a helical beater which fluffs the cellulose material received from said beater, and means for rotating said auger for

causing its blades to sweep the interior of said second trough clean of cellulose and to keep the cellulose fluffy while moving it toward the opening in the hopper side wall, the portion of said auger disposed opposite said outlet opening having longitudinally extending and radially projecting paddles for receiving the fluffed cellulose and for sweeping the interior of said second concave portion clean of cellulose and moving it while still in a fluffed condition through the outlet opening; and

(g) a cellulose material fluffer rotatably mounted in said hopper above said auger, the axis of said fluffer lying substantially in the same horizontal plane as the beater axis and parallel therewith for receiving cellulose material laterally thrown by said beater for further fluffing the cellulose material and directing it downwardly onto said auger where the cellulose material is continually fluffed and fed along the auger to the wall opening where the longitudinal paddles will propel the fluffed cellulose through the wall opening; and

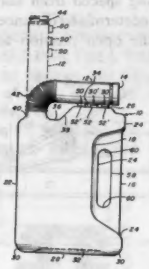
(h) a safety grill mounted in said hopper above said beater and fluffer and lying in a substantially horizontal plane for preventing an operator's hands from contacting any of the rotating parts, said grill also being used in initially breaking up a bale of cellulose material as it is forced downwardly through said grill by an operator.

4,236,655

CONTAINER WITH FLEXIBLE NOZZLE

Romilly H. Humphries, Dover, Mass., assignor to S.A.Y. Industries, Inc., Leominster, Mass.

Filed Sep. 5, 1978, Ser. No. 939,855
Int. Cl.³ B65D *23/10, 25/46*
U.S. Cl. 222—465 **5 Claims**



1. A container for fluids comprising:

a single piece, integrally formed, thin-walled, self-supporting member defining a non-collapsible rigid hollow body of fixed shape having rigid continuous substantially flat side walls and self-supporting opposite top and bottom end walls, the bottom end wall being a rigid substantially flat surface,

an elongated tubular nozzle integral with and extending from the top end wall, said nozzle adapted to be moved between storage and pouring positions, said nozzle having a flexible segment and said nozzle adapted to remain in a substantially rigid position extending outwardly from the container when in a pouring position and adapted to be flexed to other pouring positions under the influence of an external force,

said top end wall having the shape of a stepped configuration such that when the nozzle is in its storage position the portion of the top end wall over which the free end of the nozzle extends in a storage position is further from the opposing bottom end wall than the portion from which the nozzle extends, so that the sharpness of the bend in the nozzle required to store it over the end wall is reduced and so that the major portion of the nozzle is substantially parallel to the bottom end wall when the nozzle is in said storage position,

means for securing the nozzle in the storage position adjacent the top end wall and

means forming a handle in said sidewalls.

4,236,656

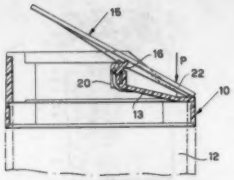
DISPENSING LID FOR A CONTAINER OF LOOSE SOLID PRODUCTS

Emilio Perrella, Viale S. Carlo 13, Segrate (Milan), Italy

Filed Sep. 21, 1978, Ser. No. 944,313
Claims priority, application Italy, Feb. 16, 1978, 20330 A/78
Int. Cl.³ B65D *47/08*
U.S. Cl. 222—517 **2 Claims**

1. A closure lid for open ended containers of loose solid particles molded of a single unitary piece of plastics material comprising a fully open base portion which is adapted to be attached to said open end of a container, a dispensing opening, a drawer for closing said dispensing opening, said drawer having a molded position and an operative position, said drawer being movable between an open position and a closed position when in said operative position, said drawer having a closure portion and a tail portion, an integral flexible hinge portion attached at one end perpendicular to said drawer between said closure portion and said tail portion and as its other end to a portion of the lid forming the bottom wall of a recessed portion of the lid disposed adjacent said tail portion to

receive said tail portion when it is depressed to open said closure portion, said recess being open at its outer extremity, a transverse wall disposed at the juncture of said hinge portion and said bottom wall, said transverse wall being integrally attached at its ends to the side walls of said recessed portion and extending substantailly parallel to and substantially half the length of said hinge portion when in the closed position, said transverse wall being spaced from said hinge portion in the closed position a predetermined distance so that it contacts said hinge portion in the open position to resiliently urge said



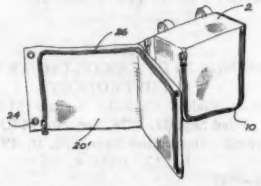
drawer towards the closed position, snap-latching means comprising tabs on said hinge portion extending toward said side walls, wings extending from said walls to engage said tabs when said drawer is in operating position to retain and pre-load said hinge in the operating position, the lid being molded with the drawer extending substantially parallel to and the hinge portion extending substantially perpendicular to the central axis of the lid so that when the drawer is in the operating position the hinge portion is pre-loaded to resiliently urge said drawer towards the closed position.

4,236,657

BACKPACK

Ronald G. Brunton, Flat 15, 71 Ryde Rd., Hunters Hill, Australia (2110)

Filed Feb. 21, 1979, Ser. No. 16,602
Claims priority, application Australia, Feb. 28, 1979, PD3545
Int. Cl.³ A45F *3/04, 4/02*
U.S. Cl. 224—153 **13 Claims**



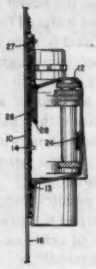
1. A traveller's pack comprising a backpack having a face for contacting the wearer's back and shoulder straps secured to said face, said pack having at least one straight side and an elongate leaf which leaf has a substantially central minor axis such that the leaf includes two superimposable halves, said leaf being connected along said minor axis to said straight side of the pack, each of the halves of the leaf being arrangeable in both a packing position in which they lie extended for supporting articles to be packed or unpacked and a stowed position in which they are wrapped around the back pack and each other and are secured in that position to the back pack.

4,236,658

SYSTEM FOR HOLDING ARTICLES TO OBJECTS

Robert A. Kallman, Brooklyn, N.Y., assignor to Kallman Research Corporation, Weatogue, Conn.

Filed May 4, 1978, Ser. No. 902,797
Int. Cl.³ A45C *1/04*
U.S. Cl. 224—250 **5 Claims**



1. A system for holding an article to an object comprising:
an elongated first strip for attachment to said object, said first strip having fastening material of a first type thereon along a substantial portion of its length,
an elongated second strip having one end attached at a point along the length of said first strip with its other end being free, said second strip having a first face which is more proximate to the fastening material of the first type of the first strip and a second face which is remote from the fastening material of the first type when the two strips are juxtaposed, said article to be held to be located between said first and second strips with said second strip to be wrapped around said article with said first face of said second strip engaging the article,
a piece of fastening material attached to and facing outwardly from said second face of said second strip adjacent said other end and of a second type which is complementary to said first type of said first strip and which is to be attached thereto, said piece having a first portion which is fixed to said second face of said second strip adjacent said other end and a free hanging tab portion which extends toward the central portion of said second strip, both of which portions are to be attached to the fastening material on said first strip when said other end of said second strip is folded around the article to be held with said tab portion being bent away from said second strip and having its free end extending in a direction opposite to said other end of said second strip whereby said tab portion extends the area of attachment of said first and second strips and serves to prevent peeling of the second strip from the first strip.

4,236,659

TRANSPORT MECHANISM FOR STATIONARY ENCODERS

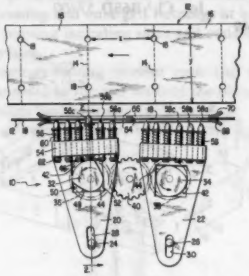
Richard A. Edwards, Alameda, Calif., assignor to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed May 3, 1979, Ser. No. 35,794
Int. Cl.³ G03B *1/22*
U.S. Cl. 226—58 **7 Claims**

1. A mechanism for feeding tag stock perforated at varying predetermined lengths and having drive holes at said perforations, said mechanism comprising:
(a) guide means for supporting said tag stock;
(b) first and second spaced-apart carrier arms mounted for oscillatory swinging and reciprocating movement beneath said supported tag stock, each of said carrier arms having cam follower means thereon;
(c) a set of spaced-apart pins, each slidably mounted in one end of each of said carrier arms, each of said pins in each

of said sets being spring-urged away from said ends toward said tag stock; and

(d) first and second cam means rotatably driven at the same speed and in the same direction in engagement with said cam follower of said first and second carrier arms respectively, whereby upon rotation of said first and second cam



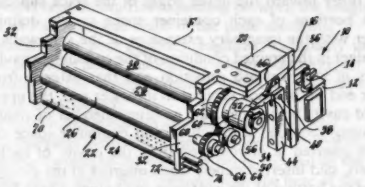
means each of said sets of pins is alternately brought into contact with said tag stock whereupon a pin in each of said sets will alternately engage a hole in registry therewith to sequentially advance said tag stock a desired increment of distance, there being a pin of one of said sets in driving engagement with a hole in said tag stock at all times.

4,236,660

SOLENOID CLUTCH MECHANISM

Tom T. Kanemura, Redwood City, Calif., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 26, 1979, Ser. No. 6,743
Int. Cl.³ B65H *17/30, 17/22*
U.S. Cl. 226—95 **4 Claims**



1. In a web feeding apparatus including a pair of rollers for intermittently advancing a sheet-like web therebetween, one of said rollers being adapted to be driven, a clutch mechanism for intermittently connecting a continuously rotating drive means to said one roller comprising:

a solenoid having a reciprocable plunger,

a pivotable arm connected at one end to said plunger,

said drive means including

continuously driven rotatable shaft means,

rotatable cam means mounted on said shaft means having a shoulder normally in abutment with the other end of said pivotable arm, gear means between said cam means and said one roller for rotating said one roller upon rotation of said cam means, and

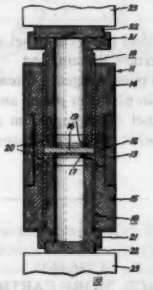
driving connection means between said shaft means and cam means for rotatably driving said cam means from said shaft means upon pivoting of said arm, said driving connection means including an elongated coiled spring, with one end of said spring being connected to said cam means, and with the opposed end of said spring being connected to a point on said shaft means radially outward from the rotational axis thereof, such that when said arm is in abutment with said shoulder on said cam means, said cam means remains stationary while said shaft means continuously rotates and whereby said cam means is rotatably driven by said shaft means when said arm is pivoted, by said plunger, out of abutment with said shoulder on said cam means in response to an electrical signal to said solenoid.

4,236,661

THERMOCOMPRESSION METHODS OF FORMING SODIUM-SULFUR CELL CASINGS

Bruce S. Dunn, Saratoga Springs, and Theodore M. Evenden, Pattersonville, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 17, 1979, Ser. No. 4,175
Int. Cl.³ B23K *20/14*
U.S. Cl. 228—184 **4 Claims**



1. A method of forming a sodium-sulfur cell casing which comprises providing a cylindrical die, centering an electrically insulating ceramic ring within the die, situating a metallic washer against each opposite major surface of the ceramic ring, providing a pair of open ended metallic containers each having an inward flange at one end thereof with the flange of each container positioned against each opposite washer, positioning a ring within each container against the interior surface of each flange, fitting a plunger within each container and pressing against its respective ring, fitting an end piece partially within the outer edge of each plunger, subjecting simultaneously each flange to a pressure in the range of 50 to 500 kg/cm^2 for a period of time from five minutes to ninety minutes, and subjecting simultaneously the die in an inert atmosphere to a temperature in the range from 550° C. to 625° C.

4,236,662

CONTAINER HAVING AN INTERNAL SUPPORT PLATFORM AND BLANK THEREFOR

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 9, 1979, Ser. No. 28,222
Int. Cl.³ B65D *5/50, 5/10*
U.S. Cl. 229—39 B **26 Claims**

1. A unitary blank adapted to be formed into a carton having an internal platform for supporting an article comprising:

a front panel, first and second side panels and a rear panel hingedly connected along parallel fold lines;

a glue flap hingedly extending along a fold line from one of said rear panels and said side panels;

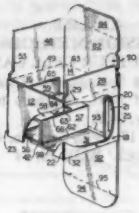
a bottom closure flap hingedly extending along a fold line from the bottom of at least one of said front and rear panels;

at least one top closure flap hingedly extending along a fold line from the top of one of said panels;

a series of four consecutively arranged platform panels hingedly connected along parallel fold lines,

said series comprising

a first platform panel hinge nding along a fold line from one of said side panels,
a second platform panel hingedly extending along a fold line from said first platform panel,
a main platform panel hingedly extending along a fold line



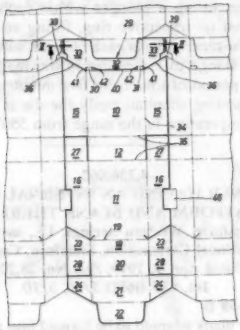
from said second platform panel and having an article receiving aperture therein, and
a third platform panel hingedly extending along a fold line from said main platform panel, and
a bottom flap panel extending from a fold line from the bottom of the other of said side panels.

4,236,663

HINGE-LID PACK, MORE PARTICULARLY FOR CIGARETTES

Hermann Krautter, Laudenbach, and Heinz Focke, Verden, both of Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed Feb. 28, 1979, Ser. No. 22,564
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 7720179[U]; Mar. 28, 1978, 2813390
Int. Cl.[2] B65D *85/10*
U.S. Cl. 229—44 CB **5 Claims**



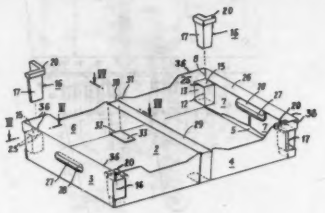
1. A hinge-lid pack, more particularly for cigarettes, comprising a unitary blank having a lid hinged to a rear wall, the lid engaging in the closed position around a collar connected to a front wall, the collar being set back inwardly near the front wall by a Z fold formed from an intermediate strip, characterised in that opposite a top edge of the front wall (**10**) most of the intermediate strip (**44**) is separated by a transverse parting cut (**40**) in such a manner that a Z fold is formed only in the region of residual connections (**30, 31**) between the collar (**29**) and the front wall (**10**), and outside the Z fold the intermediate strip (**44**) engages directly and in the unfolded state with the inside of the front wall (**10**).

4,236,664

STACKABLE TRANSPORT CONTAINER

Ludwig Hartelmüller, Erlaufstrasse 22, Südstadt A-2344, Austria

Filed May 15, 1979, Ser. No. 39,166
Claims priority, application Austria, Jun. 28, 1978, 4684/78; Oct. 19, 1978, 7525/78
Int. Cl.[3] B65D *57/00*
U.S. Cl. 229—49 **11 Claims**



1. A stackable transport container comprising a one-piece container blank which can be flattened when not in use, having a quadrilateral bottom and four walls extending from the bottom in an upward and outwardly inclined direction to define a container space widening in an upward direction, stack supports formed of portions of the container blank wall portions which are adapted to be pushed into the container space and pushed back out of the container space, being provided at four corners of the container space in the erected condition of the container and having their upper edges located at a level that is lower than the upper edges of the adjacent portions of the walls of the container, said stack supports being formed of quadrilateral container blank portions which are in connection with the adjacent wall portions of the container along folding lines, all of said folding lines being located in a vertical position in the erected condition of the container and diverging from each other toward the upper edges of the stack support, said blank portions of each container space corner defining together with the imaginary extensions of the side walls of the container in the erected condition of the container a cavity that tapers in a downward direction and that extends from the upper end of the stack support to its lower end, the upper end of said cavity being open, and an insert member of rigid material being provided for each of said container space corners that is inserted in or removed from the cavity of each stack support, said insert member, when inserted in the cavity, resting on the bottom of the container and having a base body and a supporting surface extending above the upper edge of the stack support but being located at a level that is lower than the upper edges of the adjacent portions of the side walls of the container, so that, in use, with an upper container being stacked on a lower container, said supporting surface supports the bottom of an immediately overlying container within a stack and the upper edges of the walls of the lower container prevent the upper container from lateral sliding movement relative to the lower container, the surfaces of each insert member contacting the walls of said stack supports, and each insert member, when in position, gripping an inwardly folded flap of the container and thereby locking the container blank in the erected position thereof.

4,236,665

MAIL BOX POST BRACKET

Carl R. Glass, 1036 Partin Dr., Kissimmee, Fla. 32741

Filed May 10, 1979, Ser. No. 37,611
Int. Cl.[3] B65D *91/00*
U.S. Cl. 232—39 **6 Claims**

1. The combination, with the mail box having a base and side flanges extending downwardly on opposite sides of the base, of a post bracket assembly comprising:

a pair of substantially identical upper and lower plate members;

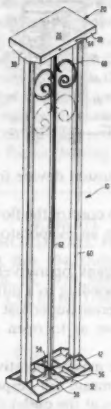
each of the plate members having a substantially rectangular main body section with an outer surface and an inner surface, and side walls and end walls extending from the inner surface;

a plurality of housings on the inner surface, including a central housing and enlarged housings at each end wall;

the central housing including sides and ends each having an inside surface;

the end housings having interior ends and sides with the sides connected to the end walls of the plate members, the end housings having inside surfaces;

a plurality of vertical splines on the inside surfaces;



longitudinal reinforcing ribs extending between the ends of the central housing and the end housings;

transverse reinforcing ribs extending between the longitudinal ribs and the side walls of the plate members;

elongated outer post members engaged frictionally in the end housings and an elongated center post engaged frictionally in the central housing with the plate members facing one another;

decorative scroll members secured to the post; and

one of the plate members being embedded in the earth, and the side flanges of the mail box being secured to the side walls of the other plate member with the base of the mail box engaged against the outer surface thereof.

4,236,666

LABORATORY CENTRIFUGE

Hans-Peter Aeschlimann, Neckarsteinach; Volker Schmidhuber, Bammental, and Werner Kappes, Eberbach, all of Fed. Rep. of Germany, assignors to Dr. Molter GmbH, Bammental, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,184

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810765

Int. Cl.[3] B04B *9/12;* **G01N** *33/48*

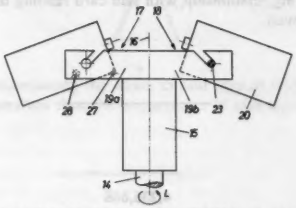
U.S. Cl. 233—26 **11 Claims**

1. In a laboratory centrifuge for producing suspensions, carrying out washing processes and the like, the centrifuge including a shaft mounted in a housing for rotation about a generally vertical central axis and drivable selectively in either of two opposing directions, L and R, by a motor, said shaft including at its upper end a shaft head onto which magazines for receiving sample containers or similar objects are pivotally mounted, said shaft head including means whereby said magazines may be locked in a slightly tilted "decanting" orientation upon rotation in one direction and may be released to swing to a generally horizontal "centrifuge" orientation upon rotation in the other direction, the improvement characterized in that:

(a) said shaft head carrying the magazines is directly coupled to said shaft;

(b) at least one pair of brackets is located opposite each other, each bracket having a pair of arms projecting outwardly, the brackets arranged symmetrically to said central axis;

(c) each bracket arm further comprises an axle on which one of said magazines is eccentrically and pivotably mounted relative to a vertical centroidal axis therethrough, such that said magazine at rest hangs in said decanting orientation, and is swingable when rotated to said centrifuge orientation;



(d) each pair of bracket arms defines between them a distance in the horizontal direction greater than the width of said magazine in said direction by a distance, s, each magazine being drivable said distance, s, on said axle between a locked position abutting a first of said pair of bracket arms and a release position abutting said second of said pair of bracket arms;

and (e) locking means (i) automatically operable when said shaft is rotated in said direction R, and said magazine in decanting orientation is driven in direction L to said lock position, to lock said magazine in said decanting orientation, and (ii) automatically operable when said shaft is rotated in said direction L, to drive said magazine on said axle in direction R, to release position whereby, with continued shaft rotation in direction L, said magazine is then able to swing outward to said centrifuge orientation.

4,236,667

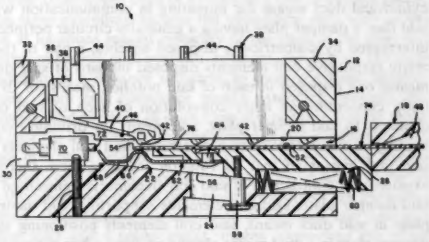
LOW INSERTION FORCE CARD READER

Daniel J. Crowley, Harrisburg, and Jon D. Stine, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 20, 1979, Ser. No. 59,352

Int. Cl.[3] G06K *7/06, 13/20, 13/24*

U.S. Cl. 235—443 **12 Claims**



1. A card reader for reading an encoded card, said card reader comprising:

a housing having a profiled passageway therein having an opening to a frontal side of the housing, said passageway

being defined by a top wall having card reading means therein, and bottom guide means slanted downward from a backward region of said passageway toward said frontal opening;

transporting means receivable within said passageway having a complimentarily slanted bottom surface for engagement with said slanted passageway bottom guide means, and having a top surface receiving the card thereon and being displaced a distance below said passageway top wall at said passageway opening, and said transporting means being moveable backwardly and upwardly into said passageway along said passageway bottom guide means toward said backward region, whereby,

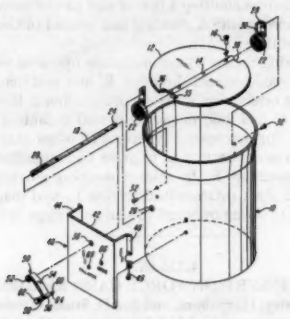
the encoded card upon said transporting means top surface is transposed toward said passageway top wall and into a reading relationship with said card reading means in said top wall.

4,236,668

THERMAL DAMPER ASSEMBLY HAVING POSITION CONTROLS

John Prikkel, III, 2952 Ensley Ave., Dayton, Ohio 45414

Filed Jul. 21, 1978, Ser. No. 927,135
Int. Cl.³ F23N *3/00*; F23L *3/00*; G05D *23/00*
U.S. Cl. 236—1 G **6 Claims**



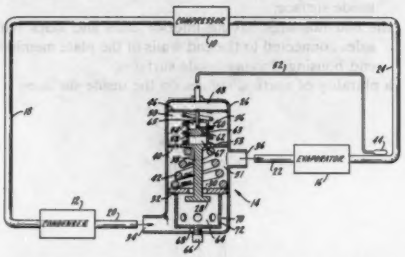
1. A thermally responsive damper assembly adapted for mounting in a flue which vents gases from a region in which combustion is to occur comprising, in combination, generally cylindrical duct means for mounting in communication with said flue, a damper plate having a generally circular periphery interrupted by diametrically disposed notches, a pair of thermally responsive coil elements disposed inboard of said duct means, one disposed in each of said notches, means for drivingly connecting an inner convolution of each of said coil elements to said damper plate, and means for drivingly connecting an outer convolution of each of said coil elements to said duct means so that all rotation resulting from thermal expansion or contraction of said coil elements is transmitted to said damper plate, said coil elements supporting said damper plate in said duct means, said coil elements positioning said damper plate in a duct means closing position when exposed to room temperatures, said means for drivingly connecting an outer convolution of each of said coil elements to said duct means including means engagable with said damper plate for preventing an over travel of said damper plate beyond a duct means opening position.

4,236,669

THERMOSTATIC EXPANSION VALVE WITH LEAD-LAG COMPENSATION

Kenneth J. Kountz, Hoffman Estates, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 18, 1978, Ser. No. 970,847
Int. Cl.³ G05D *27/00*
U.S. Cl. 236—92 B **7 Claims**



1. A thermostatic expansion device for use in refrigeration systems comprising:

valve means adapted to control the flow of liquid refrigerant from a condenser to an evaporator of the refrigeration system;

pressure-responsive means operatively connected to said valve means for responding to a differential pressure representative of refrigerant superheat changes at the outlet of said evaporator so as to open and close said valve means;

temperature-responsive means operatively connected to said pressure-responsive means for responding to a temperature of the refrigerant at the outlet of the evaporator; and

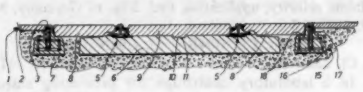
lead-lag compensation means being further connected to said pressure-responsive means for permitting a rapid movement of said valve means upon the occurrence of a sudden change either in the temperature of the refrigerant at the outlet of the evaporator or in the pressure at the inlet of the evaporator thereby maintaining a constant superheat at the outlet of the evaporator so as to effect stability of the refrigeration system, said lead-lag compensation means including a dash-pot formed of a damper piston connected to a rod and a fluid-filled cylinder, and a coil spring disposed in a surrounding relationship around said cylinder.

4,236,670

ARRANGEMENT AT A RAILROAD CROSSING

Sten Limmergard, Alvesta, and Stig Thim, Växjöboth of Sweden, assignors to A-Betong AB, Växjö, Sweden

Filed Oct. 4, 1978, Ser. No. 948,561
Claims priority, application Sweden, Oct. 7, 1977, 7711266
Int. Cl.³ E01C *9/04*
U.S. Cl. 238—8 **4 Claims**



1. Arrangement at a crossing between a road and a railway, where the road is interrupted at two opposite edges, between which is positioned at least one railroad track, said arrangement comprising a row of sleepers for supporting the rails of the track and arranged substantially perpendicular to the rails, said sleepers resting on a foundation, first slabs being located in the area between the rails and the respective edge of the road, and a second slab positioned between the rails, said slabs hav-

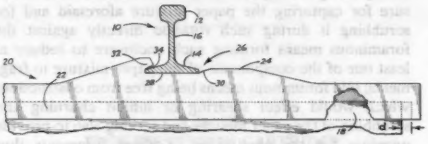
ing top surfaces substantially level with top surfaces of the rails and top surfaces of the road, said sleepers having top sides provided with two first supporting surfaces with locking means each provided to support and position one of the rails, two second supporting surfaces and locking means, each being integral with said sleepers and positioned on the outside of one of said first supporting surfaces and each in the form of a sector of a cylinder turned upwardly and with its axis extending perpendicular to the longitudinal direction of the sleeper, a central supporting surface with locking means integral with said sleeprs and between said first surfaces; and elongated supporting elements to rest on the foundation and provided wth a first edge to which the road structure adjoins and a second edge opposite to the first edge with a supporting surface; said first slabs each being provided at its underside with a first resting surface adapted to cooperate with the cylindrical resting surfaces of said sleepers in order to form a supporting bearing allowing the respective first slab to pivot, and a resting surface provided to cooperate with the supporting surface on the respective elongated element, and said second slab being provided at its underside with a resting surface adapted to cooperate with said central supporting surfaces and locking means of said sleepers for supporting and locking said second slab.

4,236,671

RAILROAD RAIL HOLDER

Ralph P. Winans, P.O. Box 194, Dallesport, Wash. 98617

Filed Jan. 15, 1979, Ser. No. 3,547
Int. Cl.³ E01B *3/00, 9/00*
U.S. Cl. 238—39 **5 Claims**



1. A rail holder for securing a railroad rail to its supporting ties, wherein the rail includes a base having side margins, the holder comprising:

(a) a cap having a top plate and a depending peripheral skirt, the cap being dimensioned to seat gravitationally over the top of a tie with the depending peripheral skirt lapping the sides and ends of the tie in a longitudinally restricted but slidable fit,

(b) the top plate of the cap having on its upper surface a rail seat dimensioned to receive the base of a rail, and

(c) on one side of the rail seat an inwardly and upwardly extending detent dimensioned and positioned for engaging and retaining a side margin of the base of a rail,

(d) a plurality of the holders being adapted for opposite placement on adjacent ties, with their respective detents engaging the opposite side margins of the base of a rail.

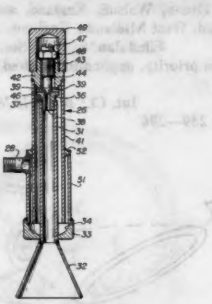
4,236,672

NOZZLE FOR STEAMING RETORTABLE POUCHES

George G. Koeberle, Arcadia, Calif., assignor to Angelus Sanitary Can Machine Company, Los Angeles, Calif.

Filed Apr. 16, 1979, Ser. No. 30,615
Int. Cl.³ B65B *31/04*
U.S. Cl. 239—139 **6 Claims**

1. A steam nozzle comprising a pipe having a first end for discharge and a second end, means in said nozzle forming an orifice at said second end and sealing off said second end, a jacket around said pipe and said means, said orifice intercommunicating between said jacket and said second end, a steam inlet for said jacket for supplying steam under pressure to said jacket, said orifice, said pipe and said jacket being dimensioned so that steam pressure drops upon passage through said orifice, the pressure of steam emitted from said first end being substantially less than the pressure at said steam inlet and the steam in



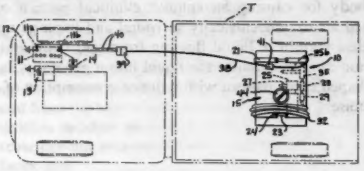
said jacket maintaining the steam in said pipe at substantially higher temperature than the temperature of said steam in said jacket.

4,236,673

PORTABLE POWER OPERATED CHEMICAL SPRAY APPARATUS

Steven R. Lake, R.R. 3, Earlville, Ill. 60518

Filed Aug. 31, 1979, Ser. No. 71,779
Int. Cl.³ E01H *11/00*
U.S. Cl. 239—172 **3 Claims**



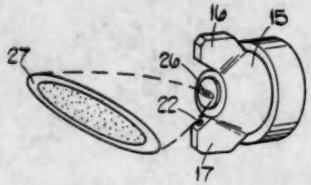
1. A portable power operated chemical spray apparatus for use with a motor vehicle having a vehicle electrical power system, the spray apparatus comprising a generally cylindrical supply tank, a tank cradle including a generally flat base plate having a length less than the length of the tank and upstanding end plates adjacent opposite ends of the base plate each having a concave upper edge shaped to receive the cylindrical side wall of the tank, a pair of generally circular metal straps each secured to the upper edge of a respective one of the end plates, each strap extending around the cylindrical side wall of the tank at locations spaced inwardly of the ends of the tank and having upturned end portions adjacent the top of the tank spaced apart a distance sufficient to receive a hand therebetween, strap end connector means extending between the upturned end portions of each strap at a position spaced above the tank for interconnecting the upturned end portions on each strap in spaced relation to each other and providing handle therebetween, a pump having an electric drive motor mounted on the upper side of said base plate inwardly of the periphery thereof and adjacent the underside of the tank and having a pump inlet and a pump outlet, means connecting the pump inlet to the tank, an elongated flexible spray hose, first hose connector means connecting one end of the spray hose to the pump outlet, a spray head means and second hose connector means connecting the other end of the hose to the spray head, and means for electrically connecting the electric drive motor to the vehicle electrical pump system for energization thereby.

4,236,674

SPRAY NOZZLE

George Dixon, Walsall, England, assignor to Binks Bullows Limited, West Midlands, England

Filed Jan. 8, 1979, Ser. No. 1,589
Claims priority, application United Kingdom, Jan. 10, 1978, 972/78
Int. Cl.[3] B05B 1/28, 7/06
U.S. Cl. 239—296 2 Claims



1. In a spray nozzle for spraying a liquid in a flat, fan-shaped spray pattern, the nozzle including a body with a central liquid aperture having an outlet end and a cap surrounding said body at the outlet end thereof, the body having passage means adapted to direct compressed air into an annular cavity which is formed between the cap and the body and which includes an air outlet surrounding the outlet end of the liquid aperture for causing compressed air to atomize liquid flowing from the liquid outlet, the improvement comprising a generally elliptical outlet end on the body defining a generally elliptical liquid outlet orifice and a generally elliptical air outlet aperture in the cap concentric with and surrounding the elliptical outlet end of the body for causing an annular elliptical pattern of compressed air to concentrically surround and impinge upon the elliptical pattern of liquid flowing from said liquid outlet orifice and directly atomize the liquid into a generally flattened, fan-shaped spray pattern with reduced consumption of air and less noise.

4,236,675

PROCESS AND APPARATUS FOR PRODUCING STOCKPILEABLE ASPHALTIC CONCRETE

Theodore S. Bladykas, 1493 Poulson St., Wantagh, N.Y. 11793

Filed Sep. 19, 1977, Ser. No. 834,520
Int. Cl.[3] B02C 23/18
U.S. Cl. 241—65 6 Claims

1. Apparatus for producing stockpileable asphaltic concrete from hot-mix asphaltic concrete, comprising:

a coolant tank for containing a coolant bath: means for dispersing the hot-mix asphaltic concrete into the coolant tank which comprises:

a supply hopper having an output port with a shearing edge;

a vaned projecting drum rotatably mounted below the output port of the supply hopper so that at least a portion of the projecting drum is above the level of the coolant bath;

a dispersing drum rotatably mounted and spaced from the vaned projecting drum so that at least a portion of the dispersing drum is above the level of the coolant bath and its axis of rotation is substantially parallel with the axis of rotation of the vaned projecting drum; and

means for driving the vaned projecting drum and the dispersing drum in opposite rotational directions; and

means for discharging the particles of asphaltic concrete from the coolant tank.

4,236,676

PAPER SORTING APPARATUS

Alexander Bialski, Loretteville; Camillo Gentile, Mississauga, and Ola Sepall, Quebec, all of Canada, assignors to Reed Ltd., Toronto, Canada

Division of Ser. No. 766,144, Feb. 7, 1977, Pat. No. 4,124,168.
This application Jul. 31, 1978, Ser. No. 929,593
Int. Cl.[3] B02C 13/10
U.S. Cl. 241—74 7 Claims

1. A mill for fragmenting paper comprising:

an elongated impeller;

foraminous means spaced from said impeller forming an enclosure about it;

means for introducing paper mixture into the space between the impeller and the enclosure;

means for procuring relative rotation of the impeller and the enclosure to churn the paper mixture within said space without cutting it, and

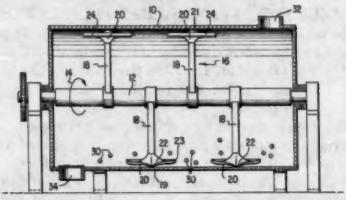
a plurality of blunt-edged fins projecting radially from and axially along the impeller in spaced relation to said enclosure for capturing the paper mixture aforesaid and for scrubbing it during such rotation directly against the foraminous means forming such enclosure to reduce at least one of the components of the paper mixture to fragments; said foraminous means being free from obstructions which would effect shearing or inhibit churning and scrubbing of the paper mixture and serving also to provide openings for the elimination of paper fragments thus formed, the space between said foraminous means and the outer ends of said fins being entirely open to permit such uninhibited scrubbing.

4,236,677

APPARATUS FOR TREATING BULK MATERIAL IN BATCHES

Wilhelm Lödige, Elsenerstr. 9c; Fritz Lödige, Leuschnerstr. 12; Joseph Lucke, Im Lohfeld 14, and Roland Lucke, Karl-Arnold-Allee 3, all of D-4790 Paderborn, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 958,811, Nov. 8, 1978, abandoned, which is a continuation of Ser. No. 841,528, Oct. 12, 1977, abandoned. This application Jan. 11, 1979, Ser. No. 2,607
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1976, 2646512
Int. Cl.[3] B02C 17/16
U.S. Cl. 241—172 1 Claim



1. An apparatus for treating bulk material, said apparatus comprising a generally cylindrical container having a generally horizontal axis, a shaft having an axis common with said

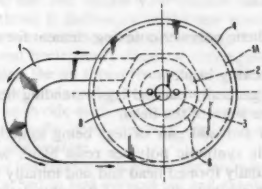
generally horizontal axis and being rotatably journalled in said container, drive means for rotating said shaft, a plurality of shovel units mounted on said shaft for rotation with said shaft within said container, each of said shovel units including a radially extending arm having an inner end fixedly secured to said shaft and an outer end carrying a shovel element, each of said shovel elements including a forward pointed tip closely spaced from an inner surface of said container, each shovel element having a circumferentially extending central portion extending rearwardly from said tip and being substantially uniformly spaced from said container inner surface, each of said shovel elements having a generally planar peripheral edge terminating in a trailing edge and generally curving radially inwardly and in opposite axial directions from said tip, striking elements in the form of balls loosely disposed within said container for use in preventing caking and incrustation of bulk material on the inner surface of said container, said balls being of a minimum size to prevent wedging of said balls between said shovel elements and said container, each of said shovel elements having an axial extent greater than the spacing of said arms along said shaft wherein upon each rotation of said shaft all areas of said container inner surface between remote ones of said shovel elements has a shovel element presented thereto, and each of said shovel elements having a radially inner surface curving radially inwardly from said tip in circumferential and axial direction for imparting to said balls and bulk material being treated a tangential and radial motion away from said inner surface of said container.

4,236,678

ENDLESS RIBBON CARTRIDGE

Gerald C. Sienkiewicz; Donal J. McQuade, both of Raleigh, and Herbert G. Leonard, Louisburg, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1979, Ser. No. 746
Int. Cl.³ B65H *17/48*
U.S. Cl. 242—55.19 A **3 Claims**



1. An improved cassette apparatus for an endless loop of wound web material in which a freely rotatable spool bearing said wound web is housed within a casing and provided with means for allowing said ribbon to be withdrawn from the innermost coil of said winding on said spool and rewound on the outermost coil thereof, the improvements comprising:

said freely rotatable spool is provided with a first polygonally shaped flange of smaller maximum exterior dimension than the minimum internal diameter of said coil and said flange is located adjacent to one edge surface of said wound coil, said flange being encircled by said coil; and

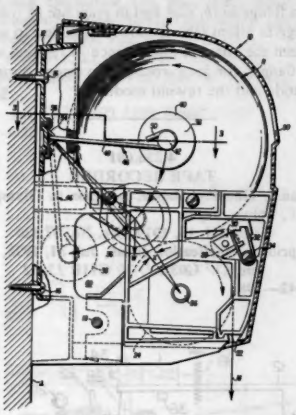
a second flange on said spool facing the opposite edge surface of said coil and being provided with a circularly shaped flange surface on which the innermost coil of said ribbon is wound.

4,236,679

FLEXIBLE SHEET MATERIAL ROLL DISPENSING

Paul W. Jespersen, Houston, Tex., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Jun. 21, 1979, Ser. No. 50,517
Int. Cl.³ B65H *19/06*
U.S. Cl. 242—55.53 **12 Claims**



1. In a dispenser for flexible sheet material having at least one roll of sheet material and mechanism to pass sheet material from the roll out of the dispenser, a method for promoting feeding of sheet material from the roll and out of the dispenser comprising the steps of:

resting the roll surface on a feed roller;

passing sheet material from the roll between the roll surface and the feed roller to rotate the roll and feed roller incident withdrawal of material from the roll;

guiding downward movement of the roll through an arc spaced from the axis of the feed roller as the roll diameter diminishes incident depletion of material on the roll to increase driving pressure between the roll and feed roller surfaces; and

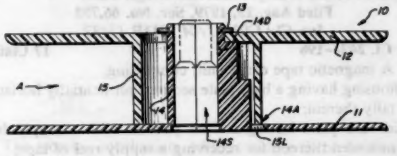
passing the essentially depleted roll past the feed roller surface of discard.

4,236,680

TAKE-UP REEL

John U. Thompson, Arlington Heights, Ill., assignor to Oce'-Industries, Inc., Chicago, Ill.

Filed Nov. 22, 1976, Ser. No. 743,646
Int. Cl.³ B65H *75/28*
U.S. Cl. 242—74.1 **6 Claims**



1. A slip-lock take-up reel for roll film and the like comprising a drive flange having an axial core defining a drive socket, a driven flange having an axial core surrounding the first core to serve as a spool and interengaging means guiding the flanges for relative rotary movement about an axis of the socket, the reel being characterized in that the driven flange core has a feed passage for a film end of a roll film that is to be wound upon the spool in an annular space defined between the flanges, and the drive flange core has drive cam means eccentric to the

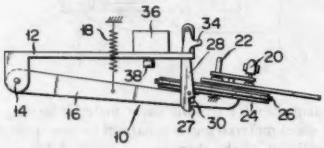
axis to undergo rotary movement relative to the driven flange between a slip position wherein the drive cam means presents a relieved portion thereof in radially spaced relation to the feed passage region of the driven flange core for allowing movement of the film end through the feed passage and a lock position wherein the drive cam means presents a raised portion thereof radially adjacent a circumferentially spaced region of the driven flange core, said reel in response to rotation of the drive flange in a film take-up direction acting to grip the film end between the cores in interference fit relation and thereby lock the flanges for joint rotary movement during the film take-up mode and the rewind mode.

4,236,681

TAPE RECORDER

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1979, Ser. No. 57,320
Claims priority, application Japan, Jul. 31, 1978, 53-93309
Int. Cl.[3] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—198 **3 Claims**



1. A tape recorder comprising a movable chassis, a capstan and a flywheel fixed to said capstan carried by said movable chassis, said movable chassis being movable between a raised and a lowered position and when in said raised position setting up a sound reproducing/recording state, a fixed chassis, a motor having an output shaft disposed on said fixed chassis, and a motor pulley fixed to said output shaft, said flywheel being at a distance from said motor pulley when said movable chassis is in said lowered position in which it is in a stop state, and said flywheel being pressed against said motor pulley to be connected directly with said motor when said movable chassis is raised to set up the sound reproducing/recording state, whereby the motor will generate a driving torque for the capstan.

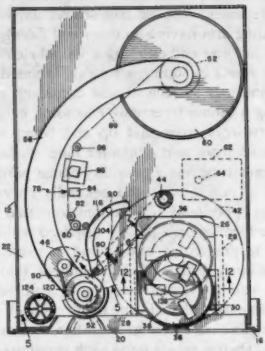
4,236,682

SLOT LOADED, LOW PROFILE MAGNETIC TAPE DRIVE

William M. Barton, Jr., San Diego, Calif., assignor to Cipher Data Products Incorporated, San Diego, Calif.

Filed Aug. 15, 1979, Ser. No. 66,792
Int. Cl.[3] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—198 **17 Claims**

1. A magnetic tape drive unit, comprising;
a housing having a base plate secured substantially horizontally therein;
said base plate having a front portion with a supply hub mounted thereon for receiving a supply reel of tape;
a tape take-up reel having support means mounted on said plate;
actuating means coupled to said support means to move said take-up reel between a loading position at the side of the supply hub and an operating position at the rear of the housing;
a tape utilization assembly including at least a tape reading head mounted on said base plate between the loading and operating positions of the take-up reel, to receive the tape thereon as the take-up reel moves from the loading position to the operating position;



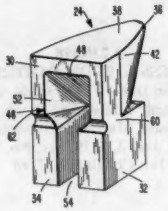
and drive means connected to said supply hub and take-up reel for selective rotation thereof.

4,236,683

COUPLING ELEMENT FOR SLIDE FASTENER AND METHOD OF MANUFACTURE

George B. Moertel, Conneautville, Pa., assignor to Textron Inc., Providence, R.I.

Filed May 24, 1976, Ser. No. 689,414
Int. Cl.[2] A44B *19/02*
U.S. Cl. 24—205.13 R **9 Claims**



1. A synthetic polymer coupling element for a slide fastener comprising
an interlocking head,
a pair of generally parallel legs extending downward from opposite sides of the head,
said head and said pair of legs being initially formed in a flowable synthetic polymer resin blank wherein one of said initially formed head and said initially formed pair of leg portions has an excess of flowable resin, and
said excess material being laminarly extruded through portions of the legs adjacent to the head to orient the polymer in the portions of the legs adjacent the head.

3. A chain for a slide fastener comprising
a pair of carrier tapes;
a pair of pluralities of synthetic polymer interlocking coupling elements;
each of the coupling elements having a pair of parallel spaced elongated legs secured to and extending perpendicular to the inner edges of the tapes;
further each of the coupling elements having a head supported by the pair of legs spaced from the respective inner edges of the tapes;
each head having a side cross section with a generally triangular shape defined by a top surface of the head generally parallel to the inner edges of the tape, and a pair of bottom

surfaces of the head extending in equal and opposite angles away from the respective inner edges of the tapes;

further each head having a tapered locking protrusion on the front thereof and having a locking recess in the back thereof for receiving the locking protrusion of a mating head portion;

each of said locking protrusions being defined by the respective top surface, one of the respective pair of bottom surfaces, and a pair of converging side surfaces;

each of said locking recesses being defined at the top by the other of the respective pair of bottom surfaces, at the sides by converging inside surfaces, and the bottom of each recess opening into the space between the respective pair of legs;

said pair of bottom surfaces of each head converging at a point adjacent a front of the respective pair of legs; and

each of the pairs of legs having sections adjacent the respective heads with reduced cross section wherein the synthetic polymer is oriented longitudinally relative to the legs.

4,236,684

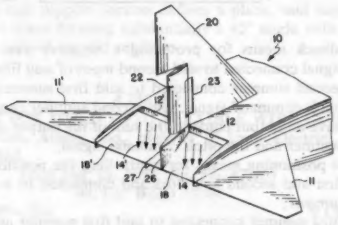
THRUST AUGMENTED SPIN RECOVERY DEVICE

Bobby L. Berrier, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 727,503, Sep. 28, 1976. This application Apr. 27, 1979, Ser. No. 34,104

Int. Cl.³ B64C *15/02*

U.S. Cl. 244—52 **4 Claims**



1. The combination of a twin engine jet propelled aircraft having a vertical tail and rudder yaw control surfaces and wherein the jet thrust is discharged in the rear portion of the aircraft, the improvement therewith comprising:

a pair of adjacent horizontally disposed rectangular nozzles for discharging the jet thrust from the aircraft;

individual nozzle wedges disposed in each of said nozzles and serving to divide each nozzle exit area into a pair of separate rectangular exits disposed one above and one below each said wedge;

a single vertical tail rigidly attached to the aircraft, a rudder hingedly attached to said vertical tail and extending rearward to orient the lower edge thereof directly over the path of the jet thrust stream;

a rudder tab of substantially planar shape disposed at the lower edge of said rudder and disposed substantially within the same plane as said rudder and extending downward therefrom substantially intermediate the nozzle pair to a position adjacent the individual nozzle wedges;

a bottom splitter plate vertically disposed beneath and intermediate the individual nozzle wedges serving to maintain the exhaust stream exiting beneath each said wedge of the individual nozzles separated;

whereby, as said rudder tab is deflected cooperatively with said rudder, said rudder tab interacts with the jet exhaust stream exiting above the nozzle wedges to deflect it to a sideward direction relative to the aircraft and thereby impart a yawing force upon the aircraft and create supercirculation about said rudder, wherein said rudder interacts with the airflow passing thereover to create an additional yawing force upon the aircraft.

4,236,685

STEERING MECHANISM WITH AN ACTIVE FORCE FEEDBACK, ESPECIALLY FOR AIRCRAFT

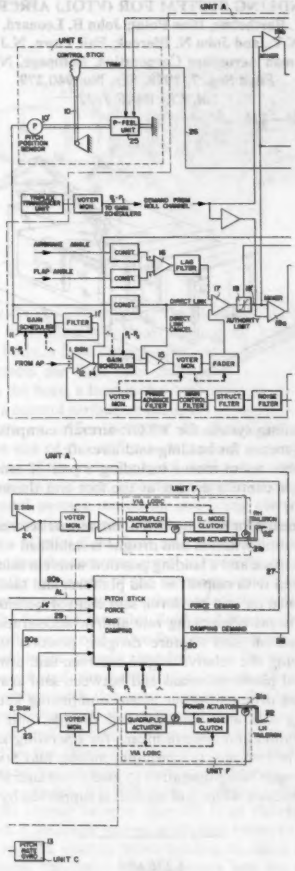
Gerhard K. Kissel, Ottobrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,748

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807902

Int. Cl.³ G05D *1/08*; G64C *13/04*

U.S. Cl. 244—223 **6 Claims**



1. The steering mechanism with an active force feedback, especially for an aircraft, comprising a manual steering means, automatic steering means, signal providing means including pitch position sensor means (**10'**) operatively connected to said manual steering means to provide a pilot trim control signal, pitch rate gyro means (**13**) providing a gyro feedback signal, signal processing means including differential amplifier means (**12**) operatively connected to said pitch position sensor means and to said pitch rate gyro means for providing a difference output signal, force control and damping circuit means (**20**),

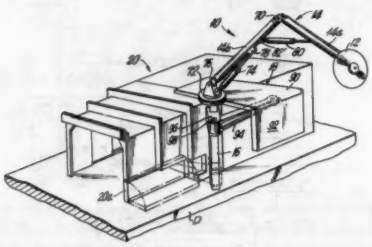
authority limit circuit means (18) operatively connecting said difference output signal of said differential amplifier means (12) to said force control and damping circuit means (20), and means directly connecting the output of said differential amplifier means to said force control and damping circuit means, further circuit means (19*a*, 19*b*, 23, 24) operatively connecting said authority limit circuit means (18) to said automatic steering means, said signal providing means comprising means for supplying an additional input signal or signals to said force control and damping circuit means (20), and feedback circuit means for supplying output signals from said force control and damping circuit means (20) to said manual steering means.

4,236,686

SHIP COMPATIBLE LAUNCH, RETRIEVAL AND HANDLING SYSTEM FOR (VTOL) AIRCRAFT

Richard W. Barthelme, Blue Point; John B. Leonard, Northport, both of N.Y., and John N. Biercuk, Fair Lawn, N.J., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Sep. 7, 1978, Ser. No. 940,379
Int. Cl.[2] B64F *1/12*
U.S. Cl. 244—116 **6 Claims**



1. A handling system for VTOL aircraft comprising:

platform means for holding said aircraft;

articulatible boom means including a pair of arm elements having a capture drogue at the free end thereof for said aircraft;

control means for moving said boom means between a catching position wherein said drogue is stabilized with respect to free space and a landing position wherein said drogue is stabilized with respect to said platform and said aircraft is positioned on said platform, said control system including input means comprising rate and/or acceleration sensors mounted on said capture drogue; position sensors for measuring the relative angles between said arm elements and said platform means and between said arm elements and said drogue; output means comprising actuators for moving said arm elements and drogue, and automatic stabilization and control means for operating said output means in response to said input means; said boom means and drogue being operative to guide said aircraft between said positions while said aircraft is supported by its engine thrust.

4,236,687

EJECTION SEAT WITH PITCH, ROLL AND YAW CONTROL

W. James Stone, Ridgecrest, Calif., and Lovic P. Thomas, Valparaiso, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 24, 1979, Ser. No. 42,170
Int. Cl.[3] B64D *25/10*
U.S. Cl. 244—122 AD **11 Claims**

1. An aircraft ejection seat, comprising:

a first gimbal system mounted on the bottom of said aircraft ejection seat;

a first means for producing thrust mounted on said first gimbal system;

a second gimbal system mounted on said aircraft ejection seat;

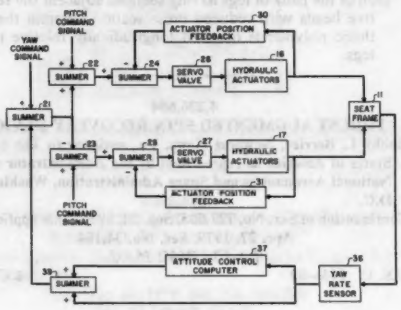
a second means for producing thrust mounted on said second gimbal system;

means for controlling the directions of the thrusts of said first and second means for producing thrust and connected thereto comprising;

first and second actuators connected between said aircraft ejection seat and said first means for producing thrust;

third and fourth actuators connected between said aircraft ejection seat and said second means for producing thrust;

a first summer having first and second inputs and an output, said first input responsive to a yaw command signal;



feedback means for providing a negative yaw feedback signal connected to said second input of said first summer;

a second summer connected to said first summer and to a pitch command signal, said second summer configured to have an output equal to the sum of the output of said first summer and the pitch command signal;

first positioning means for controlling the positions of said first and second actuators and connected to said second summer;

a third summer connected to said first summer and responsive to the pitch command signal, said third summer configured to have an output equal to the pitch command signal minus the output of said first summer; and

second positioning means for controlling the positions of said third and fourth actuators and connected to said third summer.

4,236,688

ANCHORING DEVICES

John J. Wilk, 608 Longwood Ct., Glenwood, Ill. 60425

Filed Jan. 15, 1979, Ser. No. 3,368
Int. Cl.[3] F16B *15/00*
U.S. Cl. 248—71 **7 Claims**

1. An anchor useful for attaching articles to a wood member of predetermined width comprising:

a support section including an arcuate portion;

a pair of arms extending from said support section, each arm extending to an end away from said support section;

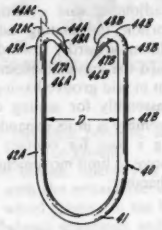
a retainer at each of said ends of said arms being affixed so that as said arms are pushed onto a wood member of predetermined width, said retainers force said pair of arms apart and when said arms are pulled off a wood member of predetermined width, said retainers tend to grip the wood member of predetermined width;

wherein said arms are spaced apart from one another by a distance substantially equal to the width of the wood member of predetermined width;

wherein said retainers define a plane with which said retainers are substantially aligned;

wherein said retainers extend toward each other and toward said support section such that when viewed from a line of sight perpendicular to said plane formed by said retainers, the connection between each of said arms and each of said retainers is substantially arcuate, the angles formed by the axis of each of said retainers and the axis of each of said respective arms is substantially 45° and said arms are substantially parallel;

wherein the contact point of said retainers with the wood member of predetermined width when said arms are



pushed onto and around the wood member of predetermined width is such that said contact point when viewed from a line of sight perpendicular to said plane formed by said retainers is formed by a rounded lower wall which extends away from said support and a flat upper wall which extends away from said support section and away from said other retainer; and,

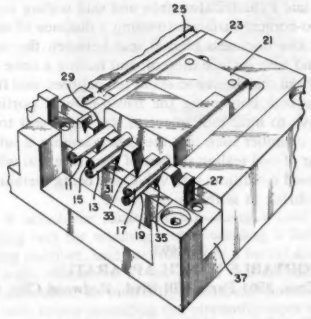
wherein said support section defines a plane, said support section plane forming substantially a 45° angle with said plane defined by said retainers.

4,236,689

CONNECTOR MOLD WITH FLEXIBLE WIRE GUIDE

Alan R. Hass, Albion, Ind., assignor to Lyall Electric, Inc., Albion, Ind.

Filed Jun. 11, 1979, Ser. No. 47,320
Int. Cl.³ B22D *19/04*
U.S. Cl. 249—204 **9 Claims**



1. A flexible insert arrangement for an electrical connector mold for closing an otherwise open mold end from which electrical leads extend, the same insert adapted for use with a variety of lead numbers and sizes, the arrangement comprising:

a first generally flat rectangular body of resilient material having a plurality of lead accepting notches along one edge thereof;

means for deforming the first rectangular body to temporarily displace resilient material to form about the leads to complete the formation of an insulating material accepting connector forming cavity; and

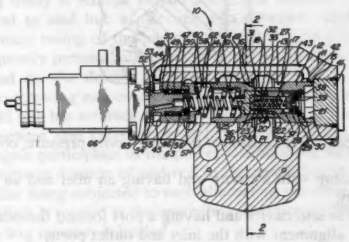
an additional generally flat rectangular body of resilient material having a plurality of teeth along one edge thereof alignable with corresponding lead accepting notches of the first rectangular body, the means for deforming including means for aligning the teeth and lead accepting notches and for forcing the first body and the additional body toward one another interlocking the teeth and lead accepting notches with leads captured therebetween.

4,236,690

ELECTROHYDRAULIC FLOW CONTROL APPARATUS

Robert Smilges, Paris, France, and Richard Wigmore, Brighton, England, assignors to Abex Corporation, New York, N.Y.

Continuation of Ser. No. 801,280, May 27, 1977. This application Jan. 22, 1979, Ser. No. 5,543
Int. Cl.³ F16K *11/10*
U.S. Cl. 251—30 **1 Claim**



1. A flow control valve having a metering orifice opening in proportion to an electric current comprising: a body, a fluid inlet in the body, a fluid outlet in the body, a bore in the body which connects the fluid inlet and outlet, a metering spool mounted in the bore, a land in the bore between the fluid inlet and outlet, a control surface on the spool co-operative with the land to form an orifice between the fluid inlet and outlet wherein the size of the orifice is dependent upon the relative linear position of the metering spool and land, a source of fluid under pressure in said inlet, a control chamber at one end of the metering spool passage means for providing pilot fluid from the fluid inlet to the control chamber, means for maintaining a constant rate of pilot fluid flow, said pilot fluid in the control chamber biasing the metering spool to open the orifice, means connecting the other end of the metering spool to low (tank) pressure, spring means at said other end of the metering spool opposing the force of the pilot fluid and biasing the spool to close the orifice, a second valve for controlling the pressure of the pilot fluid in the control chamber to set the position of the metering spool and the orifice size, means connecting the control chamber with the valve, wherein the second valve includes a movable control spool and a seat, said second valve forming a second variable orifice the opening of which is determined by the relative positions of the control spool and seat, a solenoid having a movable plunger tending to close the second valve, means for adjusting the force of the plunger acting on the second valve in response to an elecrical input to the solenoid, a feedback spring positioned between the metering spool and the control spool tending to open the second valve, wherein the force of the plunger sets the size of the second orifice which sets the pressure of the pilot fluid, the pilot fluid in the control chamber moves the metering spool to open the first orifice and the resulting movement of the metering spool biases the feedback spring against the valve control spool to overcome the solenoid plunger force and open the second valve to thereby limit the pressure of the pilot fluid and stop the movement of the metering spool when the force of the feedback spring on the control spool equals the force of the solenoid plunger, a stop member mounted in the bore between the metering spool and the second valve, the stop member having a second axial bore, the spring means engages said stop

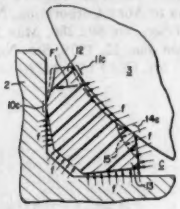
member and the feedback spring passes through the second axial bore without engaging the stop member.

4,236,691

BALL VALVE TO RELIEVE CAVITY PRESSURE

Joseph B. Wright, Northboro, Mass., assignor to Jamesbury Corporation, Worcester, Mass.

Filed Nov. 29, 1978, Ser. No. 964,653
Int. Cl.³ F16K *5/06*
U.S. Cl. 251—315 **3 Claims**



1. A ball valve capable of relieving cavity pressure, comprising:

a housing with a cavity and having an inlet and an outlet port;

a ball in said cavity and having a port formed therethrough for alignment with the inlet and outlet ports;

a valve seat ring positioned on each side of the ball between the ball and the housing, each said seat ring being generally kidney shaped in transverse cross section, with the radially inner peripheral part thereof defining a lip portion and the radially outer peripheral part thereof defining a heel portion, the lip portion and heel portion each having a ball contact zone and a housing contact zone, the housing contact zone of the lip portion being located radially inward of the heel portion, that part of the lip portion which faces the housing between the housing contact zone and the radially innermost part of the lip portion being tapered toward the ball axis defining a clearance space with the housing, and in the absence of cavity pressure the lip portion being in contact with both the ball and housing and the heel portion being in contact with the housing but spaced from the ball, and in the presence of cavity pressure the lip portion being in contact with both the housing and ball and the heel portion being in contact with the ball but spaced from the housing, so that in the presence of cavity pressure, cavity pressure forces act on the radially outer part of the seat ring between the lip ball contact zone and the lip housing contact zone; and

vent means on the heel portion to establish communication from the cavity to that part of the seat ring which faces the ball between the heel ball contact zone and the lip ball contact zone, to permit cavity pressure forces to be applied to such part which will collectively result in a resolved force sufficient to deflect the lip portion away from the ball and vent cavity pressure when it reaches a predetermined level, the clearance space which is provided at that part of the lip portion facing the housing enabling the lip to deflect and venting to occur from either the upstream or downstream side of the ball.

4,236,692

CONTROLLED FLOATING SEAT FOR GATE VALVES

Alton M. Williamson, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

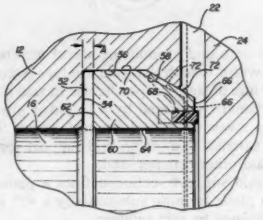
Filed Apr. 20, 1979, Ser. No. 31,725
Int. Cl.³ F16K *3/00*
U.S. Cl. 251—328 **1 Claim**

1. In an expanding gate valve having a valve body providing a fluid flow passage therethrough, a valve chamber in the body communicating with the flow passage, and an expanding type gate assembly in the valve chamber movable in a collapsed condition between open and closed positions and disposed in an expanded condition when in the open and closed positions, the improvement comprising:

an annular groove extending around the flow passage directly in said valve body, said groove opening to the valve chamber and having a bottom surface spaced from the valve chamber;

an outer surface of said groove having a generally cylindrical portion spaced from the valve chamber and a frusto-conical portion adjoining said cylindrical portion, sad frusto-conical portion terminating adjacent the valve chamber and inclining inwardly toward the flow passage as it extends toward the valve chamber;

an annular valve seat in said groove having a sealing surface facing the gate assembly for sealing contact therewith when the gate assembly is in its expanded condition, said valve seat having a base for contact with the bottom surface of the groove to limit movement of said seat away from the valve chamber;



an outer side of said valve seat having a generally cylindrical surface adjacent said base and contacting the cylindrical portion of said groove, said cylindrical surface being of lesser width dimension in the direction of the axis of the flow passage than the width dimension of said cylindrical portion of the groove to permit movement of said seat in the groove toward and away from the valve chamber; and

a frusto-conical surface on said outer side of the valve seat between said cylindrical surface and said sealing surface, said frusto-conical surface extending a distance of at least one-third the thickness of said seat between the sealing surface and base surface thereof, and having a cone angle of from about one degree to about ten degrees, said frusto-conical surface contacting the frusto-conical portion of said groove to limit movement of the valve seat toward the valve chamber such that the gate assembly is substantially clear of said sealing surface of the valve seat when in the collapsed condition, said valve seat being metallic and having a shrink fit within said groove.

4,236,693

PORTABLE WINCH APPARATUS

Elmer R. McCrea, 3561 Farm Hill Blvd., Redwood City, Calif. 94061

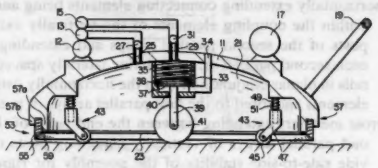
Filed Jul. 21, 1977, Ser. No. 817,792
Int. Cl.³ B66D *3/26*
U.S. Cl. 254—323 **6 Claims**

1. Portable winch apparatus comprising:

a substantially rigid, hollow housing, open on the bottom, capable of maintaining a high vacuum when the housing bottom is pressed against a substantially planar, non-porous, rigid surface so as to form a closed chamber;

resilient seal means, attached to the housing on the bottom thereof, for defining substantially a plane to support the housing, when the housing is pressed against a substantially planar surface, while maintaining a vacuum in the closed chamber thus defined;

a vacuum pump to evacuate the closed chamber;
valve means for releasing a vacuum from the closed chamber;
at least one retractable wheel with associated wheel shaft, mounted inside and depending downward from the housing which, in the unretracted position, makes contact with the ground and allows the housing to be rolled about and



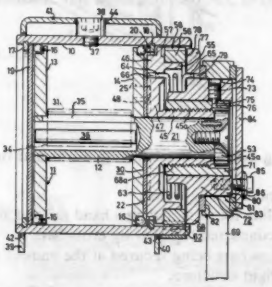
which, in the retracted position, allows the housing to make contact with the ground;
wheel retraction means, operatively associated with the housing, and with the retractable wheel, for raising and lowering the wheel relative to the housing;
supplementary balance apparatus; and
a powered winch, rigidly attached to the housing.

4,236,694

MANUAL WINCH WITH SAFETY CLUTCH, ESPECIALLY AS A POWER SOURCE IN NURSING FOR LIFTING PATIENTS

Nils L. O. Kristensson, Stockholm, Sweden, assignor to Landstingens Inkopscentral Lic, Ekonomisk Forening, Solna, Sweden

Filed Dec. 6, 1978, Ser. No. 967,144
Claims priority, application Sweden, Dec. 8, 1977, 7713950
Int. Cl.[3] B66D *1/00*
U.S. Cl. 254—365 **3 Claims**



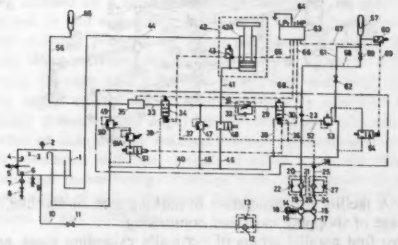
1. A winch for raising and lowering a load comprising: a winding reel for winding and unwinding a flexible load-supporting member, said reel including a barrel and two circular end walls connected to the barrel and an axially projecting shaft extension; an internally cylindrical housing surrounding said reel; means mounting the circumferences of said circular end walls for rotation against the inside of said housing; means locking said reel against axial displacement within said housing; a sleeve rotatable on said shaft extension, said sleeve having a circular flange portion provided with an axially facing annular abutment surface and said sleeve having an externally threaded portion; a hub having an internal thread engaged with the external thread on said sleeve and rotatable in either direction relative to said sleeve and said hub having an annular abutment surface facing said annular abutment surface on said sleeve; an annular friction collar rotatably mounted between said annular abutment surfaces and having opposite axially facing surfaces facing the respective abutment surface on said sleeve and on said hub; a helical torsion tension spring connected between said circular flange portion and said respective circular end wall for producing engagement of said annular abutment surfaces with said opposite axially facing surfaces of said friction collar with a predetermined amount of friction; a holding catch cooperating with said friction collar to prevent rotation of said reel in an unwinding direction and to permit rotation of said reel in the opposite direction; clutch means for connecting and disconnecting said circular flange portion with one of said circular end walls of said reel in a manner such that when said reel is unloaded and non-rotating said hub and said friction collar, clamped together by said spring, and said sleeve can rotate in the unwinding direction; whereby when rotation in a winding direction is imparted to said hub, the latter threads on to said shaft extension in a direction toward said reel, so that said hub will press said friction collar harder between said abutment surfaces and thereby provide transmission of torque due to friction to the reel via the collar, the latter thereby turning freely in relation to said catch; and whereby rotation imparted to said hub in the opposite direction results in a momentary easing of the pressure on said friction collar and consequently permits rotation of said reel under the action of the load on the flexible load-supporting member until the relative screwing movement caused thereby between said reel and said hub has returned said abutment surfaces into engagement against said collar with such pressure that said collar once again participates in the power transmission, and brakes or terminates rotation of said reel in the unwinding direction, the collar being subjected to such alternating pressures as long as said hub is rotated in the unwinding direction and the load-supporting member is loaded.

4,236,695

SEA SWELL COMPENSATION

Archibald J. S. Morrison, 3 Lyle Rd., Greenock PA16 7QT., Scotland

Filed Oct. 20, 1978, Ser. No. 952,993
Claims priority, application United Kingdom, Oct. 27, 1977, 44693/77; Nov. 2, 1977, 45494/77; Nov. 8, 1977, 46333/77; Feb. 16, 1978, 6141/78
Int. Cl.[3] B66D *1/48*
U.S. Cl. 254—277 **10 Claims**



1. A sea swell and shock load compensator comprising a hydraulically-operated means for heaving in and paying out a hoist rope, a high pressure hydraulic system for supplying hydraulic fluid to the means so as to enable the means to heave in the hoist rope when carrying a load under a given maximum load, and a low pressure hydraulic system for supplying hydraulic fluid to the means so as to enable the means to heave in the hoist rope when carrying a load under a given lesser load, the hydraulic systems being pressurised by gas-loaded accumu-

lators, and selection means for selectively connecting the hydraulic systems with the hydraulically-operated means.

4,236,696

MULTICAPSTAN TRACTION UNIT

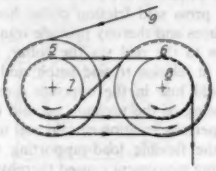
Raymond J. Hicks, Powys, Wales, and John T. H. Webb, Sunningdale, England, assignors to Wharton Engineers (Elstree) Limited, London, England

Filed Jan. 18, 1978, Ser. No. 870,538

Claims priority, application United Kingdom, Jan. 20, 1977, 2399/77

Int. Cl.³ B66D *1/76*

U.S. Cl. 254—297 **25 Claims**



1. A traction unit which comprises two pairs of two capstans for handling a common line, the capstans of each pair having a common axis and the axes of each pair being in separate and spaced apart parallel relationship to each other, one capstan of each pair of capstans being larger in diameter than the other capstan of that pair, cycloidal gears being provided between the capstans of each pair of the capstans to effect opposite rotation between the capstans in each pair, with one of the capstans of one pair being coupled to another capstan of the other pair of capstans to coordinate the rotation of said capstans.

4,236,697

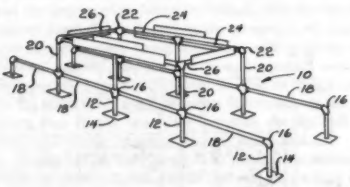
CART STORAGE DEVICE

Alfred T. Savino, 5900 W. Sixty-Fifth St., Chicago, Ill. 60638

Filed Oct. 6, 1978, Ser. No. 949,072

Int. Cl.³ E04H *17/00*

U.S. Cl. 256—1 **8 Claims**



1. A facility for installation in parking lots, or the like, for storage of shopping carts and comprising:

two first parallel arrays of vertically extending posts, each parallel array having a plurality of posts extending in spaced apart relation in the array and including two terminal posts located at the ends of the array, the posts of the first arrays having one end thereof rigidly anchored to the parking lot and terminating in a free end and extending substantially vertically away from the parking lot surface;

coupling means affixed to the free ends of the vertically extending posts;

horizontally extending elements being anchored within the coupling means at the terminals of the vertically extending posts of the first parallel arrays and extending along each said array to define laterally spaced-apart protective rails in combination with the arrays;

two second parallel arrays of vertically extending posts with the posts of the second arrays having one end thereof rigidly anchored in the coupling means affixed to the free ends of the posts of the first arrays of vertically extending posts and terminating in free ends and extending away from said coupling means;

coupling elements affixed to the free ends of the posts in the second parallel arrays;

horizontally extending connecting elements being anchored within the coupling elements of the vertically extending posts of the second parallel arrays and extending along each second parallel array to define laterally spaced-apart rails in planar conjunction with the horizontally extending elements anchored to the first parallel arrays of posts; and

cross members extending between the end posts of the second parallel arrays of vertically extending posts to provide side-to-side stability of the assembly for rigidity of the complete structure and whereby a shopping cart entrance area defined by the parking lot surface and the terminal posts at the corresponding ends of said two first parallel arrays is provided with clearance for the stored shopping carts to be moved therethrough.

4,236,698

RAILING FOR BUILDING WORKS AND THE LIKE

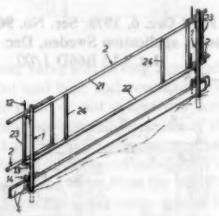
Jean Compte, Samois sur Seine, France, assignor to Campenon-Bernard Cetra, Clichy, France

Filed Mar. 30, 1979, Ser. No. 25,637

Claims priority, application France, Mar. 31, 1978, 78 09620

Int. Cl.² E04H *17/16*

U.S. Cl. 256—23 **4 Claims**



1. A railing assembly for building works and the like comprising:

(a) posts and a railing frame,

(b) said railing frame including a hand rail and an intermediate rail connected together by cross-bars,

(c) said cross-bars being secured at the ends of said rails to form a rigid structure,

(d) said posts including a pole and two hooks which are laterally spaced along the pole and are effective to hang said railing frame to said posts,

(e) said hooks having upwardly directed free end portions which are spaced outwardly from the pole to form an inner width that is larger than twice the width of said rails whereby two overlapping railing frames can be hanged to each post even if said posts are out of line.

4,236,699

APPARATUS FOR WET-POST TREATMENT OF METALLIZED IRON ORE

William L. Davis, Jr., Bakersfield, Calif., assignor to Hicap Engineering & Development Corporation, Salt Lake City, Utah

Filed Jul. 10, 1978, Ser. No. 923,166

Int. Cl.³ C21D *9/00*

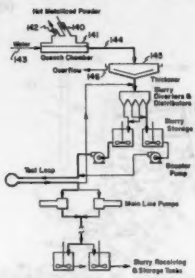
U.S. Cl. 266—114 **3 Claims**

1. Apparatus for wet-post treating of a hot metallized iron

ore product produced by direct reduction apparatus and methods to prevent re-oxidation thereof comprising,

a water quench chamber;

means for moving hot metallized produce into said quench chamber;



pump means for moving a slurry of metallized product and water from said wet quench chamber; (and)

circulation means for keeping the metallized product suspended in said slurry; and

storage means for receiving and storing indefinitely said slurry of metallized product under water.

4,236,700

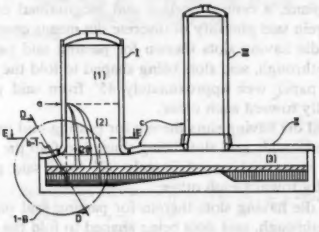
DEVICE FOR SUSPENSION SMELTING OF FINELY-DIVIDED OXIDE AND/OR SULFIDE ORES AND CONCENTRATES

Simo A. I. Makipirtti, Nakkila, and Jussi J. Kayhko, Pori, both of Finland, assignors to Outokumpu Oy, Outokumpu, Finland

Division of Ser. No. 753,575, Dec. 22, 1976, Pat. No. 4,139,371, which is a continuation-in-part of Ser. No. 588,602, Jun. 20, 1975, abandoned. This application Oct. 13, 1978, Ser. No. 951,063

Int. Cl.³ F27B *3/24*

U.S. Cl. 266—161 **2 Claims**



1. A suspension smelting furnace for the suspension smelting of a finely divided material selected from at least one of the group comprising oxide and sulfide ores and concentrates, especially iron-rich copper and nickel concentrates, and comprising a horizontal lower furnace, to which the lower ends of at least one vertical reaction shaft and at least one rising shaft are connected, a lower portion of said reaction shaft encompassing a suspension reduction zone and an upper portion of said reaction shaft encompassing a suspension oxidation zone above said suspension reduction zone, and means at an upper end of the suspension oxidation zone for producing a suspension of a feed mixture containing the finely-devided material with gas and for directing a suspension of the finely divided material and gas downwards in and through the suspension oxidation and the suspension reduction zones, devices located at the lower end of the suspension reduction zone for sulfidizing or reducing the suspension, a melt reduction zone within the lower furnace under the suspension reduction zone into which most of the suspension is discharged, and devices in the rising shaft for withdrawing any remaining suspension from upper part of the rising shaft; means for injecting an oxidizing gas horizontally into a matte phase under a slag layer in a melt reaction zone in the lower furnace below the lower end of the reaction shaft in order to produce raw metal from valuable metals present in the melt; and means for withdrawing such raw metal and waste slag from the lower furnace.

4,236,701

DEVICE FOR FIXING A PLANAR WORK PIECE

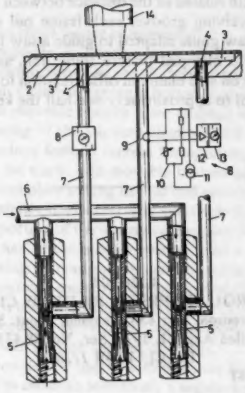
Herbert E. Mayer, Eschen, Liechtenstein, assignor to CENSOR patent- und Versuchs-Anstalt, Vaduz, Liechtenstein

Filed Dec. 11, 1978, Ser. No. 968,196

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848684

Int. Cl.³ B25B *11/00*

U.S. Cl. 269—21 **2 Claims**



1. An improved apparatus for fixing a planar work piece in position, particularly a semiconductor used in processing cycles for the production of integrated circuits, said apparatus being defined by a supporting plane; a number of apertures disposed in said supporting plane, each of said apertures are under reduced pressure by means of individual tubes; gage means being provided for measuring the flow rate of a fluid running through said individual tubes; and said work piece being urged against said supporting plane by means of said reduced pressure, said improvement comprises: providing a number of independent reduced pressure generating devices, each connected with one of said individual tubes, the outputs of said gage means being connected with a comparator, and an output signal of said comparator being criterion for the correct position of said work piece.

4,236,702

PICTURE FRAME MAKING TOOL

Burton G. Keddie, 1705 Wedgewood West, Elm Grove, Wis. 53122

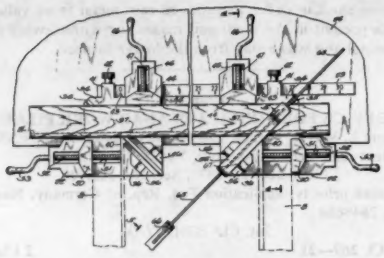
Filed Dec. 6, 1978, Ser. No. 966,845

Int. Cl.³ B25B *1/20*

U.S. Cl. 269—41 **9 Claims**

1. A picture frame making tool comprising two frame rail clamps, each having a fixed jaw and a movable jaw, a scale bar on which said clamps are mounted for at least one to be moved relative to the other to establish them in a spaced apart relation determinable by reference to measurement indicia on the scale bar, means for locking the clamps against movement relative to

said scale bar, each of said fixed jaws having a shoulder adapted to be received in the picture receiving groove of a frame rail whereby the rail is clamped at its outside edge by the movable jaw and at the inside edge of its picture receiving groove by the fixed jaw, said scale bar being calibrated to read



in units of length related to the distance between the corners of the picture receiving groove, each frame rail clamp further comprising a saw guide adapted to guide a saw for a miter cut at the ends of a clamped picture frame rail, said saw guide being disposed on said clamp in offset relation to said shoulder a distance equal to approximately one-half the kerf of the saw.

4,236,703

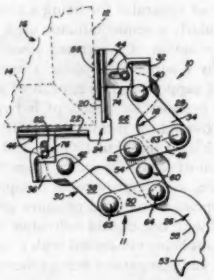
CONTROLLED PRESSURE DRAW CLAMP

Cleatus G. Stevenson, Box 436, Ashland, Mont. 59003

Filed Aug. 21, 1979, Ser. No. 68,433

Int. Cl.³ B25B *1/20*

U.S. Cl. 269—41 **11 Claims**



1. In a handle-locking clamp device having a guide body to which an operating handle is pivotally connected, a pair of jaw levers pivotally mounted on the guide body respectively connected by links to the operating handle and a pair of angularly related jaw elements engageable with a workpiece and respectively connected to the jaw levers, the improvement residing in means mounting each of said jaw elements on the guide body for limited displacement, and lost-motion connecting means interconnecting said jaw levers with the jaw elements, respectively, for transmitting clamping forces to the jaw elements, each of said jaw elements having pressure distributing means displaceable relative to said guide body and the jaw lever associated therewith for preventing localized concentration of clamping pressure applied to the workpiece.

4,236,704

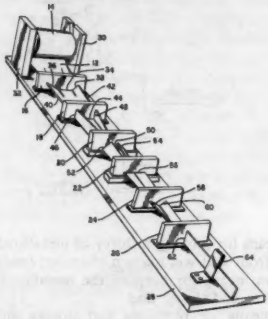
PAPER FOLDING APPARATUS

Cyril F. Bell, 4886 Candlewood La., Stone Mountain, Ga. 30088

Filed Apr. 9, 1979, Ser. No. 28,339

Int. Cl.³ B65H *45/22*

U.S. Cl. 270—94 **2 Claims**



1. Apparatus for longitudinally folding a paper web, said apparatus comprising:

means for holding and longitudinally dispensing a paper web from a roll;

a plurality of discrete die means for longitudinally passing said paper web through die openings in each of said die means, said die openings being in axial alignment with said longitudinally dispensed paper web, and said die openings being shaped such that distinct folds are progressively made in said paper web as said paper web is passed through said die means;

wherein said paper web has a substantially horizontal folding plane, a central portion and longitudinal edges and wherein said plurality of discrete die means comprises:

a first die having slots therein for passing said paper web therethrough, said slots being shaped to fold the edges of said paper web approximately 45° from said plane inwardly toward each other,

a second die having slots therein for passing said paper web therethrough, said slots being shaped to fold the edges of said paper web approximately 90° from said plane inwardly toward each other;

a third die having slots therein for passing said paper web therethrough, said slots being shaped to fold the edges of said paper web approximately 135° from said plane inwardly toward each other;

a fourth die having a slot therein for passing said paper web therethrough, said slot being shaped to fold the edges of said paper web approximately 180° from said plane inwardly toward each other so that said edges overlie said central portion of said paper web to thereby form a folded paper web having longitudinal folded edges;

a fifth die having slots therein for passing said folded paper web therethrough, said slots being shaped to fold said folded edges approximately 45° from said plane inwardly toward each other; and

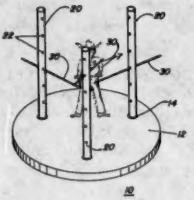
a sixth die having a slot therein for passing said folded paper web therethrough, said slot being shaped to fold said folded edges approximately 90° from said plane inwardly toward each other such that said folded edges overlie each other.

4,236,705

SCULPTURE HOLDING APPARATUS

Mary D. McCarty, Meridian, Id., assignor to Fun Sculpture, Inc., Boise, Id.

Filed Aug. 28, 1978, Ser. No. 937,076
Int. Cl.[3] B23Q *3/02*
U.S. Cl. 269—100 2 Claims



1. Apparatus for supporting an unhardened sculpture comprising:

a substantially circular base provided with a planar top surface having an unobstructed center portion including three post receiving apertures spaced equidistantly from one another adjacent its periphery;

three vertically extending posts, circular in cross section, each rotatably seated in one of said apertures, each of said posts including a plurality of horizontal openings cylindrically cut therethrough and vertically spaced from one another; and

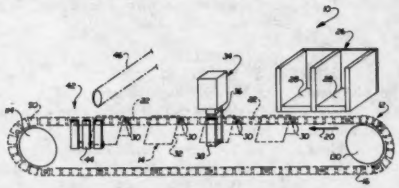
a plurality of cylindrical support members, each of said members adapted to horizontally extend through and slidingly engage one of said openings, for holding the sculpture in place.

4,236,706

SIGNATURE CONVEYOR FOR USE WITH INSERTER AND STITCHER

James R. Schlough, Easton, Pa., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 18, 1979, Ser. No. 31,203
Int. Cl.[3] B42B *1/02*
U.S. Cl. 270—53 12 Claims



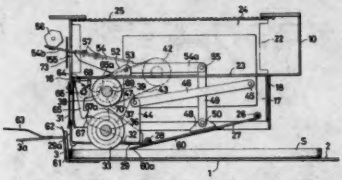
1. An assembly for transporting a signature folded along a line to form two leaves, said assembly comprising a signature support means for moving said signature support along a path, said signature support having a pair of sloping faces which meet to form an apex which is parallel with said path, guide means for varying the orientation of said signature support as it moves along said path between an upright position in which the signature support is centered below the fold of the signature with one leaf of the signature resting on one face of the support and the other leaf resting on the other face of the support and a tilted position in which only a first leaf of the signature rests on a face of the support, a support member having a face extending in the direction of said path, and the second leaf of the signature resting on said face of said support member when said signature support is in the tilted position.

4,236,707

PNEUMATIC SHEET FEEDER

Sakae Fujimoto, Chofu, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Jun. 22, 1978, Ser. No. 918,076
Claims priority, application Japan, Jun. 30, 1977, 52-78349; Jun. 30, 1977, 52-78350; Jun. 30, 1977, 52-78351; Jun. 30, 1977, 52-78352; Jul. 8, 1977, 52-81747; Jul. 8, 1977, 52-81748
Int. Cl.[3] B65H *3/08, 3/06*
U.S. Cl. 271—11 29 Claims



4. A suction sheet feeder comprising:

a sheet receptacle on which a stack of sheets is placed,

a vacuum casing disposed above the receptacle and defining a vacuum chamber having a bottom opening,

at least one movable bottom plate adapted to close the bottom opening of the vacuum chamber and having air suction openings formed therein for applying a suction to a sheet in the stack, said movable bottom plate including a first bottom plate having its rear end pivotally mounted on a substantially horizontal first shaft which is disposed on the rear portion of the vacuum casing and adapted to close the rear half of the bottom opening, and a second bottom plate having its rear end pivotally mounted on a substantially horizontal second shaft disposed on the front portion of the first bottom plate and adapted to close the front half of the bottom opening, the second bottom plate being formed with said air suction openings,

an air suction device operable to draw air from the vacuum chamber to establish selectively a negative pressure within the chamber for raising the bottom plate when a sheet is held attracted thereto,

feed means operable to feed the sheet which is held attracted to the bottom plate under the negative pressure, and

drive means operable to selectively operate the feed means.

25. A suction sheet feeder comprising:

a sheet receptacle on which a stack of sheets is placed,

a vacuum casing disposed above the receptacle and defining a vacuum chamber having a bottom opening,

at least one movable bottom plate adapted to close the bottom opening of the vacuum chamber and having air suction openings formed therein for applying a suction to a sheet in the stack,

an air suction device operable to draw air from the vacuum chamber to establish selectively a negative pressure within the chamber for raising the bottom plate when a sheet is held attracted thereto,

feed means operable to feed the sheet which is held attracted to the bottom plate under the negative pressure,

drive means operable to selectively operate the feed means, and

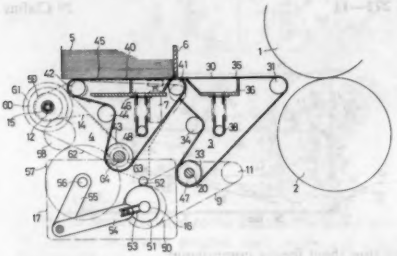
locking means for locking said movable bottom plate at a predetermined position so that the sheets, which are being fed, are not held between the movable bottom plate and the receptacle when the sheets fed by said feed means and the negative pressure within the chamber is released, said locking means including a locking claw pivotally connected with the vacuum casing, an engaging element secured to the bottom plate and a ring carrying at least one unlock pin and adapted to rotate as the drive means is energized.

4,236,708

PNEUMATIC SHEET FEEDING APPARATUS

Masaharu Matsuo, No. 17-3, Higashi Komagata 3-chome, Sumida-ku, Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,538
Claims priority, application Japan, Feb. 27, 1978, 53/20890
Int. Cl.³ B65H *3/12, 7/16*
U.S. Cl. 271—12 **7 Claims**



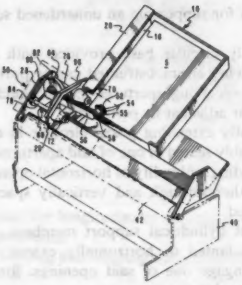
1. A sheet feeding apparatus comprising:
(a) a support;
(b) gate means mounted on said support, said gate means bounding a receptacle space and partly defining a gap, said space being adapted to hold a stack of sheets, and said gap limiting the number of sheets capable of being withdrawn simultaneously from said space in a predetermined direction;
(c) first conveying means for conveying a sheet from said space to said gap in said predetermined direction, said conveying means including
(1) a first suction box offset from said receptacle space in a direction transverse to said predetermined direction,
(2) a first perforated belt guided in a closed loop on said support, a portion of said first belt being interposed between said receptacle space and said suction box,
(3) shifting means for cyclically shifting said portion of said first belt between an operative position of simultaneous engagement with the sheet to be conveyed and said first suction box and a retracted position offset from said operative position in said transverse direction wherein said first belt is substantially cut out of engagement with the stack of sheets,
(4) first drive means for cyclically accelerating and decelerating said first belt in said closed loop between a minimum speed when said first belt portion is in said retracted position and a maximum speed when said first belt portion is in said operative position, wherein said first belt portion is moved by said first drive means in said predetermined direction at said minimum speed when said first belt portion is shifted to said operative position from said retracted position by said shifting means and said first belt portion is moved by said first drive means in said predetermined direction at said maximum speed when said first belt portion is shifted to said retracted position from said operative position by said first drive means,
(5) first suction means for cyclically drawing air from said suction box when said portion of said first belt is in said operative position until said sheet is conveyed by said portion of said first belt to said gap; and
(d) second conveying means for conveying said sheet from said gap in said predetermined direction, said second conveying means including
(1) a second suction box;
(2) a second perforated belt guided in a closed loop on said support, a portion of said second belt extending away from said gap in said predetermined direction in engagement with said second suction box,
(3) second drive means for driving said second belt continuously at a speed substantially equal to said maximum speed, and
(4) second suction means for cyclically drawing air from said second suction box when said portion of said first belt is being shifted from said operative position thereof to said retracted position wherein the sheet is transferred from said first to said second perforated belt when both said first and said second perforated belts travel at substantially equal speeds.

4,236,709

CARTRIDGE SHEET FEED ATTACHMENT

Ronald E. Hunt, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,462
Int. Cl.³ B65H *3/30*
U.S. Cl. 271—21 **8 Claims**



1. Sheet feed apparatus comprising:
a sheet stack receptacle holding a stack of sheets in a position in which they are gravitationally urged in the direction in which they are to be fed;
first and second stack restraining means against which said gravitationally urged sheets abut;
means for moving the uppermost sheet from said stack transversely of said direction of feed to a position beyond said first restraining means;
means for freeing said sheet from said second restraining means; and
means for driving said sheet in said direction of feed.

4,236,710

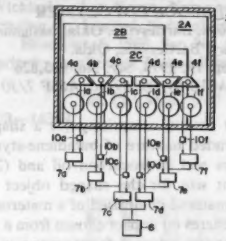
SHEET SUPPLYING APPARATUS

Takeshi Nakamura, and Hiroshi Kushima, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 18, 1978, Ser. No. 907,224
Claims priority, application Japan, May 24, 1977, 52-60148
Int. Cl.³ B65H *3/03, 7/16*
U.S. Cl. 271—108 **4 Claims**

1. In a sheet supplying apparatus of the type comprising suction disks for sucking and retaining a sheet, a pressure reducing source for applying a suction pressure to said suction disks, and driving means for driving said suction disks, to thereby supply sheets different in size one after another having no particular ordering of size from the topmost to the bottommost wherein the improvement is characterized in that a plurality of suction disks for retaining a sheet are arranged along a lateral direction of said sheets, and an edge detection means separate and distinct from the suction disks is provided for detecting only an edge of a sheet to be taken out and for disabling each of said suction disks beyond the edge of said sheet to be taken out, wherein said edge detection means comprises a plurality of edge detectors corresponding to each of said suction disks, each edge detector disabling its corresponding

suction disk upon detecting the edge of the sheet to be taken out, wherein said suction disks are connected in series so that



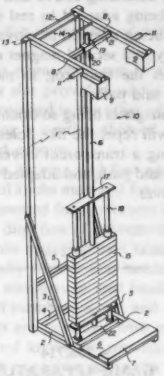
the disabling of one suction disk will result in the disabling of any further suction disks located beyond one suction disk.

4,236,711
MAGICIAN'S WALKING CANE SNAKE
Karl Klingbeil, Rte. 2, Tigertown, Wis. 54486
Filed Aug. 9, 1979, Ser. No. 65,042
Int. Cl.[3] A63J *21/00*; A45B *9/00*
U.S. Cl. 272—8 R **4 Claims**

1. A snake shaped magician's cane convertible from a rigid to a non-rigid mode comprising in combination: a body having a central core formed from a plurality of disc elements interconnected by a cable extending through the centers of said discs so that the flat sides of said discs are juxtaposed one to the other, skin means having a memory overlying said core whereby said skin means forms a continuous shroud over said core having a tail at one extremity and a neck at another extremity, and latching means integral with a terminal portion of the cane formed as a snake's head and connected to said cable whereby when said latching means are deployed said cane takes a rigid form and when said latching means are disengaged said cane is non rigid and said memory of said skin means causes said cane to form a substantially coiled snake configuration.

4,236,712
STANDING CALF EXERCISE MACHINE
Lloyd J. Lambert, Jr., c/o President, Dynamics Health Equipment Manufacturing Co., Inc., 1538 College Ave., South Houston, Tex. 77587
Filed Jan. 31, 1979, Ser. No. 7,959
Int. Cl.[3] A63B *21/06*
U.S. Cl. 272—118 **5 Claims**

1. A standing calf machine comprising a base framework, a pair of vertically upstanding rod members extending from and supported by one end of said base framework, a pivotable shaft extending between termini of said rod members remote from said base framework, a pair of elongate parallel bar members extending over said base framework and attached to said pivotable shaft and having downwardly depending shoulder pads remote from said pivotable shaft, a rod extending between said bar members between said shoulder pads and said pivotable shaft, a cylindrical rod member slideably extending downwardly therethrough and provided with means for selectively fastening said last mentioned rod together, said cylindrical rod member terminating in a weight stack having holes therethrough complemental with holes on said cylindrical rod member whereby insertion of a pin therethrough selects the magnitude of weight to be used, said weights constrained in a weight cage defined by upper and lower cross bars transverse to said cylindrical rod member which slideably extends therethrough,



said cross bars interconnected at extremities thereof by a pair of cylindrical rods spaced from, shorter than, and parallel to said cylindrical rod member, said lower cross bar affixed to said base framework.

4,236,713
FROG GAME
Joseph A. Moreno, P.O. Box 568, Saegertown, Pa. 16433
Filed Feb. 26, 1979, Ser. No. 14,972
Int. Cl.[3] A63F *9/14*
U.S. Cl. 273—1 M **1 Claim**

1. A game board and character combination comprising,
a generally rectangular board having obstacles thereon,
a first playing piece in the form of a frog and a second playing piece in the form of a snake,
a path extending around said board at simulated ground level,
said frog having a flat lower surface with parallel runners on the bottom,
a first magnet embedded in said frog,
said first magnet having a first polarity at the top and a second polarity at the bottom,
said first polarity adapted to slide over said board,
said magnets being in the form of circular discs,
the polarity of the top of said first magnet and the polarity of the top of said second magnet being alike,
whereby the field of said first magnet repels the field of said second magnet,
said snake having a curl in its tail adapted to be grasped by a hand, and a body,
and a second magnet embedded in the head of said snake adjacent its nose,

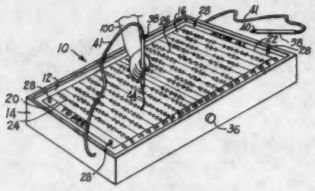
said board having a top surface having said path therein,
said body and tail being integral with each other,
obstacles in the form of bridges at said ground level and logs on said board extending above said path,
said first piece being adapted to rest on said path and said second piece being adapted to move adjacent to said first piece whereby said second magnet repels from first magnet and forces the said frog to move over said board surface along said path,
said permanent magnets being so oriented that the like poles in the snake will repel the like poles in the frog,
said board having a transparent cover disposed in a plane spaced above said path, and adapted to have said snake be moved thereover.

4,236,714

GAME APPARATUS

Carl L. Locke, 2413 W. 6th St., Irving, Tex. 75060

Filed Jan. 29, 1979, Ser. No. 7,553
Int. Cl.³ A63F 7/06
U.S. Cl. 273—94 R **9 Claims**



1. A game apparatus to be used with an electrical power supply, comprising in combination:
an electrically conducting game board;
an electrically insulating cover suitable for substantially covering the playing area of the game board, the cover forming a plurality of openings over the playing area when in place, wherein the game board with the cover in place simulates a playing field;
an electrically operable alarm device driven by the electrical power supply;
at least one movable playing piece having an electrically conducting base suitable for making electrical contact with the game board through the openings formed in the cover wherein the base of the at least one playing piece, the game board, and the alarm device are electrically connected to operate the alarm device when the base of the at least one playing piece makes electrical contact with the game board, and to not operate the alarm device when base of the at least one playing piece touches the cover without making electrical contact with the game board; and
a marker suitable for marking on the cover associated with the at least one playing piece wherein the route followed by the playing piece while it is on the cover is marked on the cover, wherein the electrically conducting base of the playing piece comprises a spring coiled around the marker and extending beyond the tip of the marker whereby the spring must be compressed in order for the marker to mark on the cover.

4,236,715

AMUSEMENT DEVICE OF COATED PAPER AND ADHERABLE OBJECT OF OIL-EXTENDED RADIAL TELEBLOCK COPOLYMER

Terence C. Middlebrook, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 19, 1978, Ser. No. 943,826
Int. Cl.³ A63B 63/00, 69/40; A63F 7/30
U.S. Cl. 273—95 R **6 Claims**

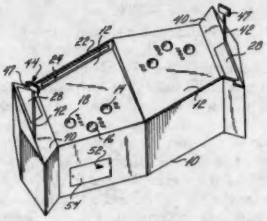
1. An amusement device comprising (1) a shaped object prepared from a blended mixture of butadiene-styrene radial teleblock copolymers and hydrocarbon oil and (2) a target material of sufficient size for the shaped object to adhere thereon, said target material comprised of a material to which said shaped object adheres on impact chosen from a paper base coated with a compound selected from among zinc sulfide, zinc-cadmium sulfide, zinc-magnesium oxide, zinc selenide, cadmium selenide, zinc silicate, calcium-strontium sulfide, indium trisulfide, gallium triselenide, antimony trisulfide, red lead (Pb_3O_4), titanium dioxide, zinc titanate, and zinc oxide.

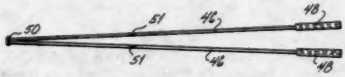
4,236,716

TWO-PLAYER PIVOTED ROD BALL DROP GAME

Melvin O. Douglas, Jr., 20-21K Richman Plaza, Bronx, N.Y. 10453

Filed Apr. 25, 1979, Ser. No. 33,314
Int. Cl.³ A63F 7/02, 7/24, 7/26
U.S. Cl. 273—110 **4 Claims**





1. Game apparatus comprising
a box-like housing having a top providing two oblong playing fields extending from opposite sides of the transverse center thereof,
each field having a lateral sloping gradually downwardly and oppositely toward a side wall of the housing exposed by such slope,
a plurality of scoring holes in each field on the higher areas thereof,
a pair of cue sticks located above each of said fields, and
means hinging together each of said pair of said cue sticks, and connecting each of said pair in a respective field,
said cue sticks having corresponding transverse shallow grooves for holding a ball thereon along the length of the sticks, so that the ball may be attempted to be dropped in one of said holes.

4,236,717

GAME MACHINES

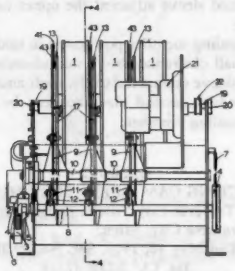
Michael Wichinsky, Las Vegas, Nev., assignor to Bell-Fruit Manufacturing Co. Limited, Nottingham, England

Filed Oct. 5, 1978, Ser. No. 948,657

Claims priority, application United Kingdom, Oct. 11, 1977, 42198/77

Int. Cl.³ A63F *5/04*

U.S. Cl. 273—143 R **12 Claims**



1. A gaming machine comprising a set of co-axial rotatable reels each of which carries a plurality of symbols around its periphery; a display window in which each of said reels displays at least one symbol when stationary; a lever operated mechanism which includes a lever operable by a player and through which the work done by a player in operating said lever is transferred to the reels so as to spin them; electrical powered drive means including (a) an electrical motor driven shaft on which the reels are rotatably mounted and individual slipping clutches through which the reels are frictionally coupled to said shaft so as to be spun thereby so that the reels are spun by the lever operated mechanism and continue to be spun by the electrical powered drive means; and stop means associated with the lever and electrical powered drive means and which operates either to stop or release the reels for spinning.

4,236,718

AMUSEMENT DEVICE

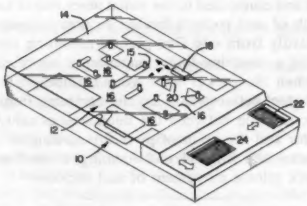
Takashi Kaga, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Japan

Filed Dec. 30, 1976, Ser. No. 755,946

Claims priority, application Japan, Jan. 22, 1976, 51-6189[U]

Int. Cl.³ A63F *9/06*

U.S. Cl. 273—153 R **1 Claim**



1. An amusement device, comprising:

a playing surface provided with a path;

an object provided with a magnet for movement along said playing surface;

a first member mounted to move in one direction below said playing surface;

a second member mounted to move in another direction below said playing surface;

means connecting said first and second members permitting each of said members to move independently of the other;

a magnet, means mounting said magnet to said first and second members;

means controlling the movement of said first and second members;

wherein said means connecting said first and second members comprises a slot provided within one of said members, a groove provided in the other of said members, and an element having a portion thereof extending through said slot into said groove;

wherein said means moving said first and second members comprises control knobs mounted for rotation, continuous flexible bands mounted for movement in directions corresponding to the direction of movement of said members, said control knobs engaging said bands such that as the knobs are manually turned, said bands rotate, and means connecting said members to said bands such that as said bands rotate said members move; and

wherein said bands are provided with continuous racks of teeth, said control knobs are provided with shafts provided with teeth engaging said racks of said bands, and said means connecting said members to said bands comprise abutments formed on said bands extending into slots formed at the ends of said members.

4,236,719

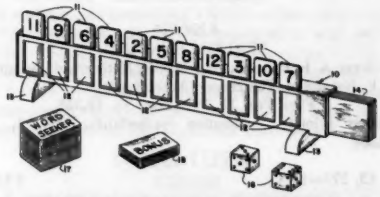
COMPETITIVE WORD GAME

Thomas R. Kerr, P.O. Box 1911, St. Augustine, Fla. 32084

Filed Aug. 20, 1979, Ser. No. 68,121

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—265 **6 Claims**



1. A game involving the spelling of words and played competitively by two to four participants, comprising:

(a) a series of elongated word cards, each having a word printed on the front face thereof,

(b) multi-apertured holders adapted to insertively accommodate a number of said word cards,

(c) elongated blank cards adapted to cover said word cards,

(d) a multitude of flat elongated shutters adapted to be vertically positioned to separately occlude individual apertures of said holders, said shutters having numerical indicia adjacent the uppermost ends thereof,

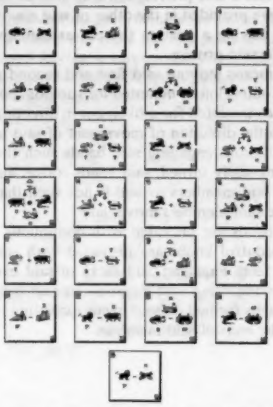
(e) a first series of playing pieces serving to expedite the playing of the game,

(f) a second series of playing pieces which facilitate score-keeping, and

(g) number-selecting means,

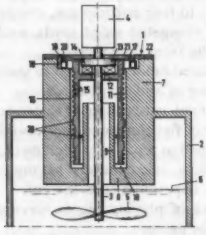
the spacing of the letters comprising the word on each word card being such that each letter is centered behind an aperture of said multi-apertured holder when said word card is inserted into said holder.

4,236,720
TILE OR CARD GAME
Jean-Claude M. J. Belony, 2803 Keith St., Marlow Heights, Md. 20031
Filed Feb. 23, 1979, Ser. No. 14,724
Int. Cl.[3] A63F 9/20
U.S. Cl. 273—292 23 Claims



1. A game apparatus for playing a game having the mode N-S, wherein N and S are integers, said apparatus comprising at least one set of playing pieces, each playing piece divided into a plurality of sections and each section bearing one of a number of preselected designs, with no piece bearing more than one of a particular design, said at least one set comprising a first plurality of two-section pieces, a second plurality of three-section pieces and a third plurality of four-section pieces, each piece also associated with a number, the number associated with each piece, number of sections and designs being selected so that the sum of the numbers associated with N pieces having one and only one design in common is S.

4,236,721
SEALING BUSHING
Theodorus A. F. Pennock, The Hague, Netherlands, assignor to B.V. Neratoom, The Hague, Netherlands
Filed Feb. 22, 1979, Ser. No. 14,325
Claims priority, application Netherlands, Mar. 1, 1978, 7802284
Int. Cl.[2] F16J 15/42
U.S. Cl. 277—14 V 9 Claims



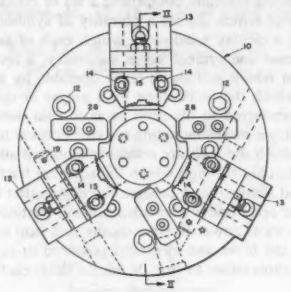
1. A sealing bushing for a member rotatable about a vertical axis and extending through a wall of a housing, said bushing including a fixed sleeve connected to the wall; a shaft of the rotatable member, the fixed sleeve concentrically surrounding said shaft; a rotatable sleeve having its upper end fixedly connected to said shaft and being concentrically received in said fixed sleeve, the connection between the upper end of the rotatable sleeve and said shaft being impermeable to liquid and gas, and the outer circumference of the rotatable sleeve connected to the shaft and the inner circumference of the fixed sleeve connected to the wall being dimensioned to define a small radial clearance between them; and means for maintaining a sealing liquid under pressure to a desired level in said small clearance during the rotation of said member, wherein the improvement comprises:

an annular chamber defined between the rotatable sleeve and the fixed sleeve adjacent the upper end of said small clearance;

a movable sealing member positioned in said space; and

a second small clearance above said chamber between the rotatable sleeve connected to the shaft and the wall of the housing, which second clearance can be sealed by said movable sealing member.

4,236,722
DOUBLE ACTING CAM OPERATED CHUCK COLLET
Merle Felker, Traverse City, Mich., assignor to Sheffer Collet Company, Traverse City, Mich.
Filed May 16, 1979, Ser. No. 39,389
Int. Cl.[3] B23B 31/16
U.S. Cl. 279—118 11 Claims



1. A chuck having a main body portion and a plurality of jaw support rockers arranged in a circle concentric with the axial center of said chuck; first means pivotally mounting each of said rockers adjacent the outer radial edge of said chuck for radial pivotal movement; each of said rockers having a leg extending axially rearwardly therefrom; a radially extending lever for each of said rockers; second means mounting each of said levers adjacent its radially outer end for pivotal movement axially of said chuck; an actuator member mounted for axial movement and connected to the radial inner end of each of said levers; each of said rockers having an arm extending axially and rearwardly from said first pivotal mounting means; each lever having a camming finger engaging a leg of one of said rockers; when the rocker is in work clamping position said point of contact between said leg and camming finger and the point of connection between the inner end of said lever and said actuator and the point of pivotal mounting of said lever being substantially aligned and forming a mechanical lock against work release movement of said rockers.

4,236,723
HIP CART
John A. Lemmon, 3049 Halcyon Ct., Berkeley, Calif. 94705
Filed Oct. 6, 1978, Ser. No. 949,353
Int. Cl.[3] B62B 1/12
U.S. Cl. 280—1.5 6 Claims

1. A cart comprising:

(a) a load support frame having a proximal end and a distal end and comprised of two generally upright, spaced,

parallel, adjustable-length rods and a plurality of lateral spacers fixedly mounted between said upright rods;

(b) means for supporting a load on said frame;

(c) a pair of wheels mounted by an axle on the distal end of said frame;

(d) a pair of spaced parallel rigid arms adjustably mounted at the proximal end of said frame at an adjustable angle θ to said frame, said arms having a proximal end and a distal end;

(e) means for connecting the proximal ends of said arms to the waist of a person,

so that for a given load, the lengths of said rods as well as said angle θ may be adjusted to cause the center of gravity of said cart plus its load to lie vertically above a point located between said axle and said person, to cause said arms to extend in a generally horizontal direction, and to cause the lateral distance between said point and said axle to be small relative to the lateral distance between said point and said person.

4,236,724

STABILIZER FOR TRACTOR HITCH

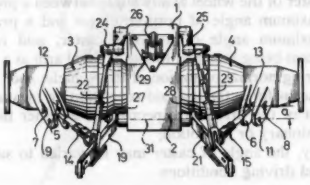
Dieter Schillings, Neuss, Fed. Rep. of Germany, assignor to International Harvester Company, Chicago, Ill.

Filed Dec. 1, 1978, Ser. No. 965,541

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 7737875[U]

Int. Cl.³ B60D *7/00*

U.S. Cl. 280—460 A **2 Claims**



1. A stabilizer for the lower link of a tractor hitch comprising:

a stabilizer bar pivotally connected to said tractor;

a bore in said stabilizer bar;

an annular sleeve defining inwardly projecting collars inserted in said bore;

a duct formed adjacent said bore;

an inwardly drawn torus formed in said sleeve complementary to said duct;

a clamping pin positioned within and engageable with both said duct and said torus to clamp said sleeve to said stabilizer;

a cylindrical bushing extending through said sleeve and projecting beyond each side thereof;

a rubber element carried between and conforming to said sleeve and said bushing;

a pair of plates attached to said link and spaced apart a distance substantially equal to the length of said bushing; and

a pin insertable through said plates and said bushing to effect an articulation and pivotal connection between said link and said stabilizer bar.

4,236,725

DYNAMIC DEVICE FOR HOLDING THE FOOT AND THE LEG IN POSITION IN A RIGID STRUCTURE

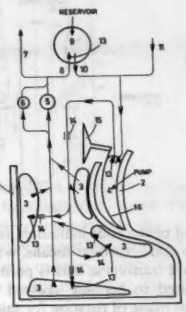
Jean-Roger Bataille, 20, rue du Commandant Rene Mouchotte, Paris, France

Filed Oct. 23, 1978, Ser. No. 953,602

Claims priority, application France, Oct. 28, 1977, 77 32577

Int. Cl.³ A63C *9/086*

U.S. Cl. 280—611 **13 Claims**



1. A device for fixing the foot and the leg to a utilization member, comprising;

a base member detachably connected to the utilization member,

framework means extending from the base member and adapted to receive the person's foot,

expandable chock means mounted to the interior of the framework to engage and clamp the foot,

and pump means carried by the framework and in communication with the chock means to cause expansion of the chock means,

said pump means comprising a feeler member at the top of the framework adapted for engagement with the leg above the foot and supported to receive leg forces in a direction substantially parallel to the base member,

the motions of the leg onto the feeler member operating the pump means to expand the chock means for fixing the foot and the leg in position within the framework.

4,236,726

HYDRAULIC SUSPENSION SYSTEM FOR AN INDIVIDUAL VEHICLE WHEEL

Theodore C. Henter, Jr., 1372 - 49 Ave., NE., St. Petersburg, Fla. 33703

Continuation-in-part of Ser. No. 823,057, Aug. 9, 1977, Pat. No. 4,133,555. This application Jan. 8, 1979, Ser. No. 2,047

Int. Cl.³ B60G *11/26*

U.S. Cl. 280—709 **4 Claims**

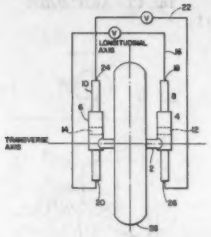
1. In a vehicle having a wheel mounted for rotation upon a transversely extending axle, the improvement of a suspension system between said wheel and a frame which is operable to maintain said axle perpendicular to the longitudinal plane of rotation for said wheel, regardless of axle movement with respect to said frame, wherein said improvement comprises:

(A) a first cylinder affixed to first end of said axle, a second cylinder affixed to the second end of said axle, wherein said wheel is mounted between said first and second ends and each of said cylinders extend vertically and are mutually parallel to themselves and said longitudinally extending plane;

(B) wherein each of said cylinders includes therewith a

double acting piston, and each piston is interconnected to said vehicle frame through a piston rod, wherein there is defined an upper and a lower pressure chamber within each cylinder each of said piston rods extend both upwardly and downwardly outside of each of said cylinders, and the distal ends of each piston rod are respectively connected to said vehicle frame; and

(C) cross-over means supply a pressure medium from the upper side of one cylinder-piston unit to the lower side of the cylinder-piston unit on the opposite side of said wheel,



each of said piston rods including means for fluid communication to said crossover means, whereby vertical movement of said transverse axis is permitted, yet said axle is not permitted to become skewed with respect to said longitudinal plane of rotation for said wheel, since a vertical movement of the axle causes a pressure medium transfer from the upper of one cylinder, to the bottom of the cylinder at the opposite side of said axle, whereby the wheel is maintained in an alignment with respect to a longitudinal plane of said vehicle regardless of relative axle movement.

4,236,727

SAFETY TOE UNITS FOR SKI BINDINGS

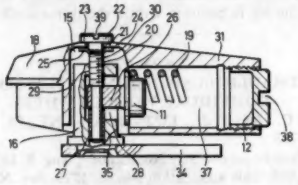
Ralf Storandt, Leonberg, Fed. Rep. of Germany, assignor to Vereinigte Baubeschelagfrabriken Gretsch & Co. GmbH, Leonberg, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,086

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757393

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—629 **28 Claims**



1. A safety toe unit for a ski binding, the toe unit comprising a base portion, a toe clamp mounted from said base portion and comprising at least a body portion and a horizontally disposed ledge fixed relative to the body portion for locating the upper surface of the sole of a ski boot, said toe clamp having first and second abutment surfaces and the base portion having first and second complementary abutment surfaces, respectively cooperable with respective ones of said first and second abutment surfaces to define first and second pivot axes substantially vertically disposed one to either side of the longitudinal axis of the toe unit, spring means operative between first and second spring abutments associated with the toe clamp and base portion respectively for biasing the said abutment surfaces on the toe clamp and the base portion into contact with each other, the unit being adapted to allow sideways displacement of the toe clamp relative to the base portion about either of said first and second pivot axes against the force of said spring means, a vertically disposed adjustment screw for adjusting the vertical position of the toe clamp relative to the base portion, and means locating the first and second spring abutments and the toe clamp including said ledge for joint movement relative to the base portion on adjustment of said vertically disposed adjustment screw.

4,236,728

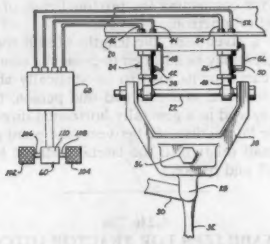
APPARATUS FOR CASTER ADJUSTMENT

Jene A. Policy, 2927 N. 39th Ave., Phoenix, Ariz. 85019, and Peter A. Giuliano, 3012 W. Heatherbrae Dr., Phoenix, Ariz. 85017

Filed Nov. 13, 1978, Ser. No. 960,481

Int. Cl.³ B60P *1/00*

U.S. Cl. 280—661 **14 Claims**



1. Apparatus employed in combination with each front wheel of a vehicle for adjusting the angle of caster of the front wheel while the vehicle is in motion; said apparatus comprising in combination:

(a) a control arm for supporting in part the knuckle spindle for the wheel;

(b) means for repositioning said control arm to define the caster of the wheel at any angle between a predetermined maximum angle of positive caster and a predetermined maximum angle of negative caster, said repositioning means being attached to said control arm as a part thereof during normal operation of the vehicle; and

(c) means for actuating said repositioning means under control of the driver irrespective of whether the vehicle is stationary or in motion;

whereby, the angle of caster may be varied to suit changing road and driving conditions.

4,236,729

SEATBELT SYSTEM

Ichiro Suzuki, Nagoya; Masanao Motonami, and Hisashi Ogawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 8, 1979, Ser. No. 37,160

Claims priority, application Japan, Aug. 18, 1978, 53-114161[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **12 Claims**

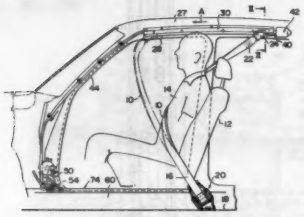
1. A seatbelt system which can automatically fasten and unfasten a belt about a passenger comprising:

a flexible tape provided with a plurality of openings along its length which is coupled to one end of said passenger restraining belt;

a toothed sprocket wheel provided for engaging with said plurality of openings in said flexible tape;

a driving means for driving said sprocket wheel and for causing said belt to approach or recede from a passenger via said flexible tape;

a receiver region formed in a space defined by an upper portion of an inner rocker panel and an inner surface of a joint of welding between the inner rocker panel and an outer rocker panel; and



a divider provided in the receiver region for dividing the receiver region into a compartment for inserting wire harnesses and a compartment for inserting said flexible tape.

4,236,730

SEATBELT SYSTEM

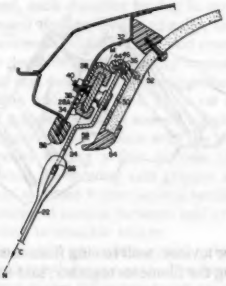
Ichiro Suzuki, Nagoya; Masanao Motonami, and Hisashi Ogawa, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 8, 1979, Ser. No. 37,153

Claims priority, application Japan, Dec. 11, 1978, 53-172001

Int. Cl.³ A62B *35/00*; B62D *21/18*

U.S. Cl. 280—804 **9 Claims**



1. A seatbelt system comprising a guide rail which is fastened to an interior of a motor vehicle body, a runner piece which is supported by said guide rail and which moves along said guide rail in a direction of the length of said guide rail, an anchor plate which is coupled to said runner piece at one end portion and which anchors one end of a passenger restraining belt at a belt anchoring portion of said anchor plate and a driving mechanism which causes said anchor plate to move along said guide rail, said seatbelt being characterized in that a central portion of said anchor plate is bent such that the one end portion and the belt anchoring portion of said anchor plate are parallel but not in line and the belt anchoring portion of said anchor plate is positioned beneath the guide rail so that said belt anchoring portion of said anchor piece and a portion of said runner piece which is directly supported by said guide rail lie on a straight line which coincides with a line of action of belt tension applied to said passenger restraining belt during a vehicular emergency.

4,236,731

CONTINUOUS STATIONERY ASSEMBLY AND METHODS OF MAKING BINDERS, FOLDER COVERS AND THE LIKE FROM THE ASSEMBLY

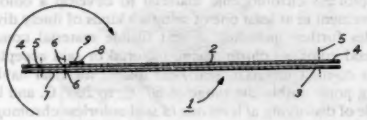
Per Hektoen, Osteras, Norway, assignor to Moore Business Forms, Limited, London, England

Filed Feb. 22, 1979, Ser. No. 14,218

Claims priority, application United Kingdom, Feb. 23, 1978, 07264/78

Int. Cl.³ B41L *1/20*

U.S. Cl. 282—11.5 A **8 Claims**



1. An improved, continuous stationary assembly having an assembly length in a longitudinal direction and an assembly width in a transverse direction perpendicular to said longitudinal direction adapted to be passed longitudinally, in continuous form, through a print unit to have information applied thereto and also adapted to be readily made into a binder, folder cover and the like comprising:

at least two continuous webs, superimposed one on top of the other, so that one web is a front web and the other web is a rear web;

each of the webs having: two longitudinally extending side edges and a web width in the transverse direction defined between the two side edges, the web width of one of said webs matching said assembly width, two longitudinally extending side marginal portions each defined adjacent a side edge and extending longitudinally therealong, a longitudinally extending line of marginal feed apertures in one side marginal portion, a longitudinally extending line of tear off perforations adjacent said one side marginal portion and extending therealong disposed nearer the other side marginal portion than the line of marginal feed apertures;

said front web and said rear web superimposed one on top of the other with the line of marginal feed apertures of the front web superimposed on top of the line of marginal feed apertures of the rear web and the line of tear off perforations of the front web superimposed on top of the line of tear of perforations of the rear web;

a longitudinal extending line of adhesive being applied to and between the front and rear webs to secure the front and rear webs together, with the line of adhesive being disposed adjacent to the lines of tear off perforations and nearer the other side marginal portions than the lines of tear off perforations; and

a longitudinally extending line of weakening in each of the front and rear webs, with the lines of weakening being disposed adjacent to the line of adhesive, nearer the other side marginal portions than the line of adhesive and being superimposed one on top of the other such that the rear web is foldable about and relative to the lines of weakening over the front web so as to form a binder, folder cover and the like and such that a longitudinal marginal portion of the webs, which is defined as the portions of the webs between the lines of weakening and the lines of tear off perforations and which contains the line of adhesive, constitutes a flap extending between the webs for supporting an insert sheet when the rear web is folded about the front web so as to form a binder, folder cover and the like.

4,236,732

HEAT-SENSITIVE RECORD MATERIAL

Takeshi Murakami, Osaka; Yoshitaka Oeda, Nara; Hiroo Hayashi, Kyoto, and Teruo Nakamura, Mabikino, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Japan

Filed Oct. 12, 1977, Ser. No. 841,396
Claims priority, application Japan, Oct. 16, 1976, 51-123980
Int. Cl.[3] B41L *1/20*; B32B *5/16*
U.S. Cl. 282—27.5 9 Claims

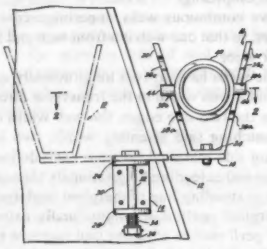
1. In a heat-sensitive record material comprising a base sheet having a color developing layer which includes finely divided particles comprising colorless chromogenic material and finely divided particles comprising acceptor which is reactive with said colorless chromogenic material to develop a color the improvement in at least one of said two kinds of finely divided particles further including a heat fusible material comelted with said colorless chromogenic material or said acceptor to form a co-melt material, said heat fusible material having a melting point within the range of 60° C. to 200° C. and being capable of dissolving at least one of said colorless chromogenic material and said acceptor therein when melted.

4,236,733

FIRE HOSE COUPLING DEVICE

Thomas P. Zambrano, 892 Palerno Rd., St. Augustine, Fla. 32084

Filed Sep. 11, 1979, Ser. No. 74,310
Int. Cl.[3] F16L *55/00*
U.S. Cl. 285—23 6 Claims



1. A fire hose coupling device for fixedly positioning and holding in place a set of opposed lugs on one coupling member of a firehose connection to permit a quick coupling or uncoupling of the firehose connection, the device comprising:

a channel member mounted on a fixed support;

said member having a pair of legs connected to a base portion;

each of said legs having along at least corresponding side edges at least one cut out portion whereby the opposed lugs of one member are fixedly held in position permitting the other member of the connection to be rotated with respect to the first member.

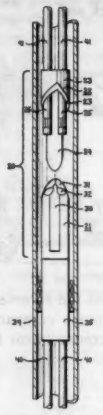
4,236,734

WELL TUBING COUPLING SYSTEM

Mansour Ahangarzadeh, Bedford, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jul. 20, 1978, Ser. No. 926,277
Int. Cl.[2] F16L *39/00*
U.S. Cl. 285—26 12 Claims

1. A round tubular well flow conductor coupling system comprising: first fluid coupling means having longitudinal flow passages; second fluid coupling means adapted to be releasably coupled with said first fluid coupling means having longitudinal fluid flow passages sized and positioned to communicate with said flow passage means in said first coupling means and being connectible with a flow conductor; a longitudinally extending guide arm having an inside longitudinal guide surface secured on and extending longitudinally beyond the free end of one of said fluid coupling means; and a longitudinally extending outside guide surface shaped to mate with said guide



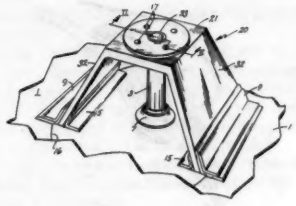
arm guide surface defined along the other of said fluid coupling means aligned parallel with and laterally spaced from said longitudinal flow passages means in said fluid coupling means.

4,236,735

FITMENT FOR A VESSEL

John D. Allen, 5005 Zahm Rd., Belding, Mich. 48809

Filed May 1, 1978, Ser. No. 901,416
Int. Cl.[3] F16L *13/04*
U.S. Cl. 285—114 13 Claims



1. A fitment for a vessel wall having filaments and a bonding matrix for binding the filaments together, said fitment comprising:

a top wall for receiving a flange of a hose or the like to be coupled to the vessel wall, said top wall having a pair of generally opposing rectilinear sides, said top wall having a pipe opening;

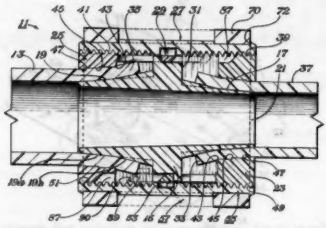
a pair of generally planar, trapezoidally shaped support legs extending downwardly from said generally opposing sides to form an obtuse angle between said top wall and each of said legs and supporting said top wall at a position spaced from the vessel wall, the area between said legs being readily accessible and laterally bounded by substantially only said legs thereby facilitating connection of said support legs to the vessel wall and facilitating cleaning of the vessel wall and said fitment in the area between said legs; and

a pipe means for carrying a substance from said pipe opening to the vessel wall and into the interior of the vessel, said pipe means being attached to said top wall at said pipe opening.

4,236,736
HOSE COUPLING

Robert V. Anderson, Fort Worth, Tex., assignor to Turnbuckle Products Corporation, Fort Worth, Tex.

Filed May 1, 1978, Ser. No. 901,493
Int. Cl.[3] F16L 33/22, 41/00
U.S. Cl. 285—150 40 Claims



1. In an accessory for a resilient hose in which an end of the hose is to be connected with a supplementary fitting, the improvement comprising:

a. a centerpiece sealingly connected with the supplementary fitting and having a bore penetrating longitudinally therethrough and having concentric about the adjacent at least one end of the bore an inverted frusto conical section adapted to sealingly receive on its exterior frusto conical surface the interior of the end of the hose and to support the end against a longitudinal tightening force by a gripper means;

b. at least one gripper means disposed concentrically about said inverted frusto conical section in receiving position with sufficient annular clearance to receive the end of the hose for insertion over said inverted frusto conical section; said gripper means having a plurality of shoulders of respectively monotonically decreasing radii longitudinally thereof from its end facing said centerpiece toward its other end, each shoulder having its same radius over a predetermined distance longitudinally, such that the distance between said shoulder and said exterior frusto conical surface decreases as said gripper means is moved longitudinally of said centerpiece so as to embed in and grip the resilient hose and retain it in place on said centerpiece when said gripper means is moved longitudinally of said inverted frusto conical surface with the hose in place; said gripper means having a first portion of a longitudinal moving means for moving said gripper means longitudinally of said inverted frusto conical section responsive to relative rotational motion between said gripper means and a surrounding turnbuckle means;

c. turnbuckle means surrounding said gripper means; said turnbuckle means having a second portion of said longitudinal moving means for moving said gripper means longitudinally of said inverted frusto conical section responsive to relative rotational motion between said gripper means and said turnbuckle means; said turnbuckle means having a second portion of longitudinal moving means complementarily engaging said first portion of said longitudinal moving means; said centerpiece being contained within said turnbuckle means so as to prevent relative longitudinal motion therebetween and permitting relative rotational motion therebetween; and

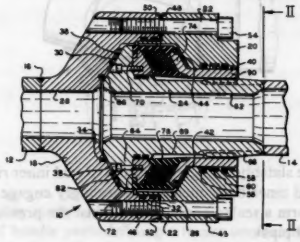
d. rotation prevention means cooperating with said gripper means and said turnbuckle means such that said gripper means is prevented from rotating with respect to said turnbuckle means; said rotation prevention means being adapted to accommodate relative longitudinal movement between said gripper means and said centerpiece;

such that after the end of the hose is inserted interiorly of said gripper means and over said inverted frusto conical section, said turnbuckle means can be rotated to move said gripper means longitudinally thereof and grippingly embed in and hold the end of the hose sealingly connected with said inverted frusto conical section.

4,236,737
CONDUIT SWIVEL JOINT

John T. Herbert, Horton, and Larry R. Nixon, Michigan Center, both of Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Sep. 28, 1978, Ser. No. 946,707
Int. Cl.[3] F16D 3/12; F16L 19/04, 21/00, 27/00
U.S. Cl. 285—234 10 Claims



1. A conduit swivel joint comprising, in combination, a first body having an axial passage, a second body having an axial passage coaxial with said first body passage, conduit attachment means defined on said bodies for attaching conduits thereto in communication with the associated passage, and support means interconnecting said bodies for relative rotative movement about the passage axes thereof comprising a pair of annular axially spaced collars having an elastomeric material bonded thereto, a plurality of annular ring members in axially spaced relationship embedded into said elastomeric material intermediate said collars, said support means permitting limited relative rotative movement by deformation of said elastomer material and including rotational bearing means permitting bearing supported relative rotative movement of said bodies, and torque regulating means mounted upon said first body regulating the torque required to produce bearing supported relative rotative movement of said bodies after the initial rotative deformation of said elastomer material.

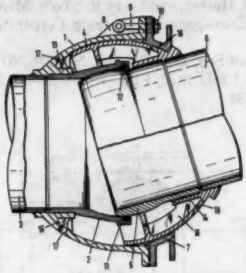
4,236,738
BALL JOINT FOR TWO PIPE ENDS

Martinus Poot, Vlaardingen, Netherlands, assignor to Machinefabriek Kreber B.V., Vlaardingen, Netherlands

Filed Apr. 11, 1978, Ser. No. 895,362
Claims priority, application Netherlands, Apr. 15, 1977, 7704152
Int. Cl.[3] F16L 27/04
U.S. Cl. 285—263 4 Claims

1. A joint for connecting the ends of a pair of pipes comprising a first assembly secured to the end of one said pipes comprising an inner ring member having an outer spherical surface, and an outer ring member extending axially over and spaced radially from first ring member and having an outer spherical surface, a second assembly secured to said other pipe comprising an inner annular body member having an inner spherical surface corresponding to the surface of said inner ring member and an outer annular body member extending axially over and radially spaced from said inner body member and having an inner spherical surface corresponding to the outer surface of said outer ring, said ring members and said body members being insertable within the other with the corresponding surfaces in slidable engagement and defining an annular chamber therebetween and seal means positioned between said inner ring member and said inner body member, apertures formed in at least one of said outer ring member and outer body member opening said annular chamber to atmosphere, and an annular

clamp having a spherical inner surface corresponding to the surface of said outer ring member and means for securing of said clamp to said outer body member to wedge said outer ring member and outer body member against axial movement, and



to cause the slidably engaging surfaces of said inner ring member and said inner body member to sealingly engage said seal means to form a sealed connection against the pressure of the fluid in said pipes.

4,236,739

THREAD INSERTER AND BRAKING MECHANISM FOR A KNOTTING APPARATUS USED ON SPOOLING MACHINES

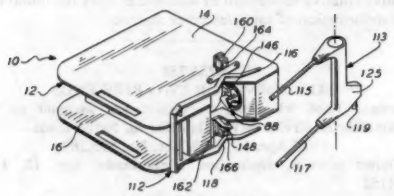
Kresimir Mista, Obertshausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,586

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 2741786

Int. Cl.³ B65H *69/04*

U.S. Cl. 289—2 **6 Claims**



1. In a knotting apparatus for spooling machines having, a housing affixed to said spooling machines and operatively coupled thereto, thread lifting means, thread guides, and a pair of binding heads, the improvement comprising:

(a) thread inserter and braking means having a pair of arms disposed external to and on either side of said housing means perpendicular to the run of the threads and operatively coupled to said spooling machine, said thread inserter and braking means inserting a pair of threads by interacting therewith and exerting a pressure thereagainst, into said thread guides; and

(b) braking means disposed on either side of said housing for cooperating with said thread inserter and braking means and retaining said thread therebetween overcoming pressure exerted against said threads by said lifting means until said threads are released from said binding heads and the threads are tightly knotted.

4,236,740

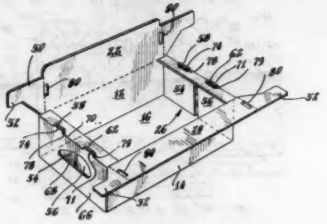
FILE BOX

John F. Sorenson, St. Paul, and Frank W. Locke, Minneapolis, both of Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Jul. 9, 1979, Ser. No. 55,971

Int. Cl.³ B65D *5/30, 5/22*

U.S. Cl. 229—36 **6 Claims**



1. A box comprising:

a bottom wall having a first and second pair of opposed, parallel edges,

a side wall connected to each of the first pair of opposed edges of said bottom wall,

an end wall connected to each of the second pair of opposed edges of said bottom wall, each of said end walls including

a pair of abutting end panels, each of said abutting end panels being connected to an edge of one said side walls, and a third end panel connected to one of said second pair of opposed edges of said bottom wall overlapping said pair of abutting end panels,

a top flap for forming a top wall for said box connected to an edge of each of said side walls,

the third end panel of each end wall including an opening,

each of said top flaps including a bendable tab extension extending from opposite ends thereof received within said opening in each of said third panels of each end wall, and

said end panels having means therebetween for locking said end panels together,

said locking means including

an upright tab on the top edge of each of said pair of abutting end panels,

a pair of spaced openings for receiving said upright tabs cut in said third end panel along a foldline spaced intermediate spaced transverse edges thereof, and

each of said top flaps including

an opening cut therein adjacent each end thereof for also receiving an upright tab of one of said pair of abutting end panels.

4,236,741

METHOD AND MEANS FOR DISPOSING OF ANIMAL WASTE

Harry W. Emme, Jensen Beach, Fla., assignor to Clifton T. Hunt, Jr., Charlotte, N.C., a part interest

Filed Dec. 8, 1978, Ser. No. 967,881

Int. Cl.³ A01K *29/00*

U.S. Cl. 294—1 BB **6 Claims**

1. Apparatus for disposing of animal waste comprising a handle, a support frame fixed to one end of the handle, a disposable bag having a closed end and an open end carried by said frame, means releasably supporting the bag with its open end around the frame and its closed end beneath the frame, said handle including an operative end portion and a free end portion, means pivotally connecting the said portions of the handle at their proximate ends, said means releasably supporting the bag comprising a rim extending above the support frame and about the open end portion of a bag carried by said frame and a retaining ring extending about the rim and frictionally pressing the open end portion of the bag against the outer

surface of the rim, a cover pivotally mounted on the handle and movable into closed position covering the open end of the

bag, and means for moving the cover into open position responsive to unfolding the handle toward its extended position.

4,236,742

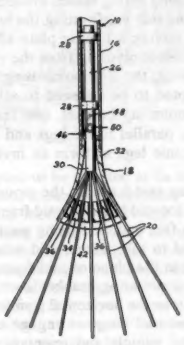
RETRACTABLE RAKE

Otis Florence, 809 Iroquois Ave., Louisville, Ky. 40214

Filed Jun. 4, 1979, Ser. No. 45,271

Int. Cl.³ A47F *13/06*

U.S. Cl. 294—24 **9 Claims**



1. A retractable rake comprising:

a. an elongated handle having an upper handgrip portion and a lower hollow shank portion;

b. the said shank portion having an enlarged hollow head fitted on the lower end thereof, the head having a partition with a series of diverging, elongated slots therein for receiving flexible tines therethrough;

c. the shank portion supporting therein a movable plunger that carries a plurality of flexible tines that in a first extended position diverge outwardly from the enlarged head so the tips are widely spaced from each other and they are disposed generally within a common plane, the said elongated slots serving to reinforce the tines against flexing in their first extended position;

d. and manual actuator means joined to the plunger and accesssible on the outside of the shank portion for retracting the plunger into the shank portion so as to retract the flexible tines and telescope them into a second retracted position substantially into the head and shank portion.

4,236,743

BOTTLE CARRIER

Earl W. Fox, 336 W. Valencia, Apt. B, Burbank, Calif. 91506

Filed Sep. 21, 1979, Ser. No. 77,558

Int. Cl.³ A47J *45/00*

U.S. Cl. 294—27 H **7 Claims**

1. A bottle carrier comprising:

a pair of handle parts defining a recess conforming substantially to the neck and lip of a bottle to be carried and an entrance portion;

means pivotally connecting said handle parts together whereby said entrance portion varies in size as a function the angle between said handle parts;

said entrance portion having a size larger than the largest size of the lip and neck portion of the bottle only at a limited angle range;

said handle parts including grip portions which cooperate when said handle parts are pivoted together to define a grip for carrying by hand; and

said handle part grip portions being spaced too great for carrying apart when said handle parts are pivoted to said limited angle range.

4,236,744

GRIPPING-LIFTING APPARATUS

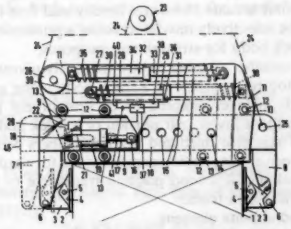
Jannes Reinders, Loppersum, Netherlands, assignor to Jannes Reinders & Noord-Nederlandache Machinefabriek B. V., Netherlands

Filed Oct. 26, 1978, Ser. No. 954,861

Claims priority, application Netherlands, Oct. 31, 1977, 7711930

Int. Cl.³ B66C *1/42*

U.S. Cl. 294—88 **7 Claims**



1. An apparatus for hoisting a load comprising:

a hoisting hook,

a frame,

at least two gripping arms mounted on the frame and each having a gripping jaw for gripping a load between them,

means for mounting at least one said gripping arm on the frame for movement relative to the other gripping arm,

means connecting the hoisting hook to said gripping arms for causing movement of said gripping jaws towards each other during hoisting movement of said hoisting hook comprising:

a first hydraulic piston-cylinder assembly mounted on the frame and having resilient means for urging the piston thereof to a retracted position,

a second hydraulic piston-cylinder assembly mounted on the frame and comprising means for actuating the movably mounted gripping arm,

means connecting said hoisting hook and said first assembly for extending said first assembly upon hoisting movement of said hoisting hook, and

hydraulic means for connecting said first and second assemblies.

4,236,745

RETRACTABLE STREAMLINING DEVICE FOR VEHICLES

Grover M. Davis, 502 Second Ave., Audubon, Iowa 50025

Filed Jan. 29, 1979, Ser. No. 7,439

Int. Cl.³ B62D *23/00*

U.S. Cl. 296—1 S **7 Claims**

1. A streamlining apparatus for trucks or the like comprising:

a first member adapted to be operatively pivotally attached to a top rear portion of a truck body along a first axis;

a second member adapted to be operatively pivotally attached to a lower rear portion of a truck body along said first axis, said first and second members being pivotable between a first position parallel to the forward direction of a truck and a second position transverse to the forward direction of a truck;

a first arcuate element;

means for pivotally attaching said first arcuate element along a second axis to said first and second members whereby said first arcuate element is pivotable between a first position wherein the first arcuate element lies generally in a first plane containing said first and second axes and a second position wherein said first arcuate member is disposed substantially at a right angle with respect to said first plane;

a first flexible sheet adapted for attachment to a rear side of a truck body, said first flexible sheet being connected to said first arcuate element whereby said first flexible sheet can be selectively moved to cover a portion of the rear of a truck body for streamlining purposes;

a third member adapted to be operatively pivotally attached to a top rear portion of a truck body along a third axis;

a fourth member adapted to be operatively pivotally attached to a lower rear portion of a truck body along said third axis, said third and fourth members being pivotable between a first position parallel to the forward direction of a truck and a second position transverse to the forward direction of a truck;

a second arcuate element;

means for pivotally attaching said second arcuate element along a fourth axis to said third and fourth members whereby said second arcuate element is pivotable between a first position wherein the second arcuate element lies generally in a second plane containing said third and fourth axes and a second position wherein said second arcuate element is disposed substantially at a right angle with respect to said second plane, said first and second arcuate elements being in juxtaposition when in their respective second positions and the first and second members are in the respective second positions thereof; and

a second flexible sheet adapted for attachment to a rear side of a truck body, said second flexible sheet being connected to said second arcuate element whereby said second flexible sheet can be selectively moved to cover another portion of the rear of a truck body for streamlining purposes.

4,236,746

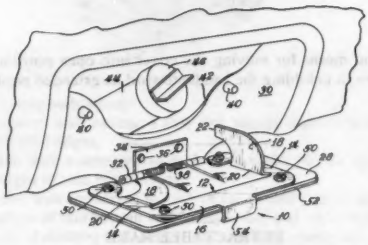
STOP FOR VEHICLE LICENSE PLATE MOUNTING BRACKET

Richard LaVoie, 1N411 Park Blvd., Glen Ellyn, Ill. 60137

Filed Apr. 27, 1979, Ser. No. 33,874

Int. Cl.³ B62D *25/00*

U.S. Cl. 296—1 C **7 Claims**



1. A stop for holding a normally vertically oriented spring hinge mounted vehicle license plate mounting bracket in a substantially horizontal position against spring pressure, the mounting bracket being spring biased toward the normal vertical position with one side confronting the body of the vehicle and the other side having a license plate affixed thereto, and being hinged to facilitate pivoting from the vertical position to the horizontal position, the stop comprising:

a flat frame adapted to be fastened to said one side of the license plate mounting bracket, said frame comprising a pair of spaced, parallel frame legs and a yoke strip connecting said frame legs to form an inverted "U"-shaped frame,

means for securing said frame to the mounting bracket, and

at least one wing located between said frame legs and having a hinged and a free end, and being secured by a hinge at said hinged end to said frame, said wing and said hinge normally lying in the plane of said frame, whereby when the license plate mounting bracket is withdrawn from the vertical position to the horizontal position, said wing may be pivoted about said hinge to engage said free end with the body of the vehicle and maintain the license plate mounting bracket in the horizontal position.

4,236,747

TRANSPORT VEHICLE

Roger D. Ratliff, 883 S. Irving Heights, Irving, Tex. 75060

Filed Nov. 13, 1978, Ser. No. 960,019

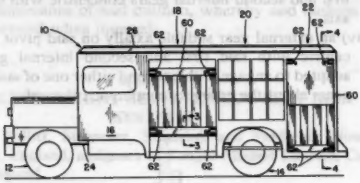
Int. Cl.³ B60R *7/00*

U.S. Cl. 296—24 R **13 Claims**

1. A versatile arrangement for a transport vehicle to allow different types of cargo to be carried thereby, comprising:

(a) a plurality of cargo bays arranged along the length of the vehicle with each cargo bay extending transversely across the width of the vehicle, and at least one cargo bay having a removable centrally located partition member extending along the longitudinal length of the vehicle, and the floor in said bay being divided into first and second floor panels, one on each side of said centrally located partition member, with each floor panel being angularly adjustable to enable the inner central portion of the floor panel to be lowered relative to the remaining portion thereof when

the partition member is in place in the cargo bay such that cargo which leans inwardly because of the angularly positioned floor panels can be supported by the central partition member, and when the central partition member



is removed the floor panels can be angularly adjusted to provide a level floor surface across the width of the cargo bay, whereby different types of freight can be carried by the vehicle in a versatile manner.

4,236,748

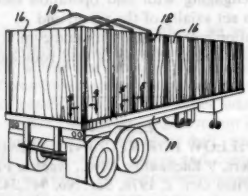
STAKE FOR TRUCK BED, TRAILER OR TRUCK STRUCTURE

Denis L. Cloutier, 632 - 2nd Ave., Beauceville-Est, Quebec, Canada (G0S 1A0), and Fernand Cloutier, 120 Verdier St., St-Joseph de Beauce, Quebec, Canada (G0S 2V0)

Filed Feb. 23, 1979, Ser. No. 14,484

Int. Cl.³ B60P *7/06*

U.S. Cl. 296—43 **8 Claims**



1. A stake adapted to be inserted at its lower end into four-sided pockets spaced around the periphery of a vehicle flatbed and having channel means for receiving wall forming panels, said stake comprising a single piece, extruded elongated hollow body of generally right triangular cross-sectional configuration having two right angle walls and a substantially diagonal wall joining said two right angle walls along respective apex edges thereby defining three apex edges each adapted to fit a corner of said pocket, said channel means integrally formed with said body and projecting laterally from one of said two right angle walls, extending longitudinally of said body from one end thereof and terminating short of the other end thereof to abut against said flatbed while said body extends within said pocket.

4,236,749

ICEBOX FOR A RECREATIONAL VEHICLE

Steven M. Schluns, Box 141, O'Neill, Nebr. 68763

Filed Mar. 26, 1979, Ser. No. 23,603

Int. Cl.³ B60H *3/04*

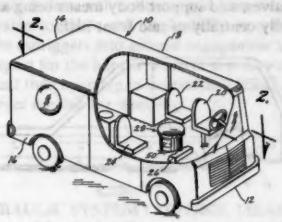
U.S. Cl. 296—156 **4 Claims**

1. In combination,

a recreational vehicle including an interior compartment having forward and rearward ends and opposite sides,

an icebox in said interior compartment, said icebox comprising an upright sidewall means having upper and lower ends, a tabletop, mounted on the upper end of said sidewall means, and an access door provided in said sidewall means,

means for substantially centrally positioning and rotatably mounting said icebox relative to said sides of said interior compartment and spaced from both the forward and rear-



ward ends of the interior compartment so that said icebox is readily accessible from all sides thereof.

4,236,750

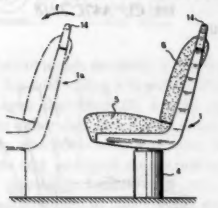
SEAT FOR A PUBLIC TRANSPORT VEHICLE

Victor Moritz, Louveciennes, France, assignor to Societe Orleanaise de Literie et de Mecanique, Paris, France

Filed May 29, 1979, Ser. No. 43,044

Int. Cl.³ A47C *4/52;* **B60R** *21/10*

U.S. Cl. 297—183 **3 Claims**



1. A seat for a public transport vehicle, the seat comprising:

a frame,

a backrest and a seat cushion supported by the frame;

a handle,

pivot means for pivotably supporting the handle on the frame above the backrest for pivotal movement in either direction about an axis parallel to the plane of the backrest, and

easily rupturable means for preventing pivoting of the handle about said axis under normal conditions of use, said easily rupturable means being adapted to rupture when an abnormally high force is applied to the handle, to permit the handle to pivot about said axis.

4,236,751

VEHICLE SAFETY SEAT BOTTOM

Werner Strien, Stuttgart-Heumaden, Fed. Rep. of Germany, assignor to Recaro GmbH & Co., Kirchheim, Fed. Rep. of Germany

Filed Aug. 15, 1978, Ser. No. 933,951

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 7728111[U]

Int. Cl.² B60R *21/10*

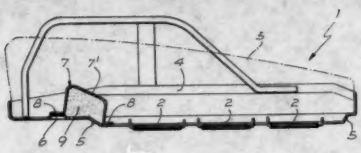
U.S. Cl. 297—216 **8 Claims**

1. In a vehicle seat having a bottom upholstery support and a seat bottom upholstery arranged on said bottom upholstery support upon which a seat user is adapted to sit, the improvement comprising:

support means secured transversely of said bottom upholstery support and projecting upwardly therefrom beneath said seat bottom upholstery, for preventing the user from

sliding forwardly on the seat bottom when the vehicle is sharply decelerated;

wherein said bottom upholstery support includes front and rear halves, said support body means being arranged substantially centrally of said front half;



said support means having substantially vertically oriented forwardly and rearwardly facing surfaces, said forwardly facing surface being spaced from the front edge of the base of the bottom upholstery support; and

said bottom upholstery support further includes a step over which said support body means is secured and from which said support body means projects.

4,236,752

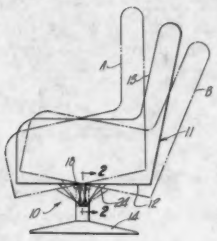
ROCKER SWIVEL ASSEMBLY FOR CHAIRS

Ned W. Mizelle, Lexington, Ky., assignor to Hoover Universal, Inc., Saline, Mich.

Filed May 4, 1979, Ser. No. 36,072

Int. Cl.[3] A47C *3/18*

U.S. Cl. 297—303 **10 Claims**



1. In a chair having a seat and a support located below the seat, a rocker swivel assembly operable to mount the seat on the support for both rocking and swiveling movement, said assembly comprising a torsion bar unit having a center section and a pair of end sections, means securing said end sections to the underside of said seat, means rotatably mounting said center section on said support and maintaining said center section against rocking relative to said support, whereby on rocking of said seat relative to said support said end sections of said torsion bar are angularly moved relative to said center section, and bearing means acting directly between said seat and said center section to transfer a portion of the downward seating load directly to said center section.

4,236,753

SEAT RECLINING APPARATUS

Hideyuki Ooshiro, Toyota, and Masakazu Chiba, Susono, both of Japan, assignors to Shiroki Kinzoku and Toyota Jidosha Kogyo Kabushiki Kaisha, both of, Japan

Filed Feb. 15, 1979, Ser. No. 12,404

Claims priority, application Japan, Mar. 20, 1978, 53-34686[U]; Dec. 4, 1978, 53-165980[U]

Int. Cl.[3] A47C *1/026*

U.S. Cl. 297—364 **3 Claims**

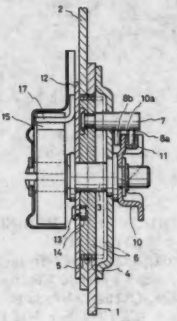
1. In a seat reclining mechanism having:

(i) a first arm having a first internal gear secured thereto,

(ii) a second arm having a second internal gear secured thereto,

(iii) a pivot having an axis and on which said first and second arms are disposed in mutually rotatable manner with said first and second internal gears concentric with said pivot axis,

(iv) an external gear slidable axially on said pivot and concentric with said first and second internal gears and adapted to engage with both and either one of said internal gears about the entire circumference thereof,



the improvement which comprises:

(a) a plurality of operation elements secured on said external gear and extending axially therefrom,

(b) a cam engaging with said operation elements and arranged to act axially of the pivot, and

(c) an operation member fast with said cam, for moving said cam to cause axial shifting of said rods and the external gear.

4,236,754

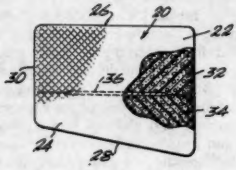
PILLOW FOR RECLINER CHAIR

Eugene J. Ehlers, 9 Enchanting Blvd., Naples, Fla. 33942

Filed Oct. 2, 1978, Ser. No. 947,843

Int. Cl.[3] A47C *7/50, 23/00*

U.S. Cl. 297—423 **1 Claim**



1. For use with a recliner chair of the type having a seat cushion with a forward face and a leg pad adapted to be moved into spaced relation from the seat cushion when the chair is in a reclining position with a leg pad face spaced from the seat cushion face a predetermined distance, a pillow comprising a body having an upper surface of a length slightly greater than the distance between the confronting faces of the seat cushion and leg rest pad and said pillow comprising a body of compressible material jacketed within an outer casing;

said body includes an upper portion and a lower portion and a reinforcing means in the form of a rigid sheet embedded between said upper and lower portions;

said pillow includes an inner face adapted to confront the seat cushion face and an outer face adapted to confront the leg rest face and the distance between said pillow face is somewhat greater than the predetermined distance and wherein one of said faces of said pillow and cushion is longer than the other face, the width of said reinforcing

means being less than the distance between said inner face and said outer face;

said body being of rubbery material;

said upper surface beging about 22 inches by 8½ inches; and

said outer case being foreshortened with respect to the normal dimensions of said cushion, whereby said cushion is compressed when inserted.

4,236,755

SHOULDER HEIGHT ADJUSTER FOR SEAT BELT SYSTEMS

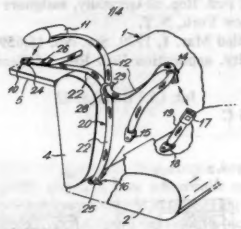
John M. Pollitt, Stranraer, Scotland, and Frederick Nicod, Carlisle, England, assignors to Kangol Magnet Limited, Carlisle, England

Filed Feb. 22, 1979, Ser. No. 14,027

Claims priority, application United Kingdom, Feb. 22, 1978, 7086/78

Int. Cl.³ A47C *31/00*; B60R *35/00*

U.S. Cl. 297—483 **15 Claims**



1. A safety belt system for restraining an occupant in a vehicle seat, the system comprising a shoulder belt extending in use diagonally across the front of the occupant from an upper first position above the user's shoulder at one side of the seat to a second lower position at the other side of the seat, elongate means, means fixing said elongate means in position so as to be independent of said shoulder belt, and connector means carried by said elongate means and connectible with said shoulder belt at a position thereon between said first position and said shoulder.

4,236,756

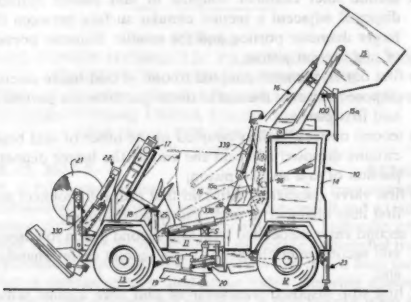
STREET SWEEPER HAVING AN ELEVATING HOPPER WITH SUPPORTING OUTRIGGERS

Donald L. Hildebrand, Union, and Ernest F. Prescott, Elgin, both of Ill., assignors to Elgin Sweeper Company, Elgin, Ill.

Filed Dec. 4, 1978, Ser. No. 966,494

Int. Cl.³ B60P *1/04*; E01H *1/04*

U.S. Cl. 298—11 **11 Claims**



1. A street sweeper having a frame, a cab positioned at a forward end of the frame, a hopper for receiving sweepings carried on the frame behind the cab, linkage for enabling the hopper to be moved over the cab to a forward dumping position, outriggers positioned at a forward end of the sweeper, hydraulic circuit means, valve means, and ram means collectively cooperable together and sequentially operable to initially move the outriggers into ground engagement to provide additional support for the hopper when in said forward dumping position and then operable to actuate said linkage to move said hopper over the cab for dumping.

4,236,757

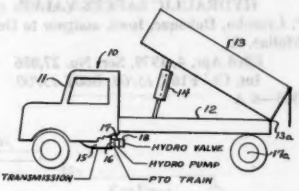
HYDRAULIC SYSTEM CONTROL MEANS

Ted W. Gregory, Mundelein, Ill., assignor to Arens Controls, Inc., Evanston, Ill.

Filed Sep. 29, 1978, Ser. No. 947,207

Int. Cl.³ B60P *1/16*

U.S. Cl. 298—22 C **14 Claims**



10. Push-pull control means movable in either direction from a neutral position for controlling a bowden cable, comprising: a body having a bore therethrough; a shaft axially movable within said body in either direction from a neutral position and having a manually accessible end, a control handle on said manually accessible end; and latch means carried by said body and arranged for releasably locking said inner member in a neutral position with respect to said tubular member for precluding inadvertent axial displacement of said shaft from said neutral position, said shaft at said neutral position having a peripheral recess, said latch means having a portion resiliently urged into said peripheral recess, said latch means portion being symmetrical axially of said shaft, said latch means further having a portion extending exterially of said body for manual movement out of said peripheral recess to permit manual movement of said shaft in either direction from said neutral position.

4,236,758

RACK DRIVE FOR A DRUM CUTTER MINING MACHINE

Hans Groger, Essen-Steele-Horst, Fed. Rep. of Germany, assignor to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

Filed Mar. 24, 1978, Ser. No. 889,706

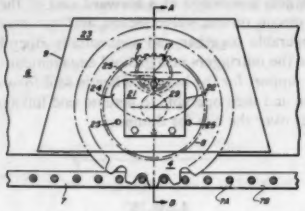
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714532

Int. Cl.³ E21C *27/24, 27/36*

U.S. Cl. 299—42 **6 Claims**

1. In a drum cutter mining machine of the type traversed along a track device extending over the distance traversed by the mining machine for movement thereof along the face of an underground mine, said drum cutter mining machine including a prime mover coupled to rotate a drive gearwheel about a first axis, the combination therewith of apparatus to couple said drive gearwheel with a rack device at the side of the mining machine opposite the mine face, said apparatus including a hollow gearwheel including internal gear teeth drivingly cou-

pled to said drive gearwheel for rotation by said prime mover about a second axis spaced from said first axis, said hollow



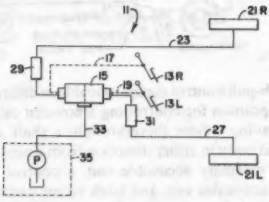
gearwheel further including external gear teeth to mesh with teeth of said rack device.

4,236,759

HYDRAULIC SAFETY VALVE

George P. Lysenko, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 4, 1979, Ser. No. 27,056
Int. Cl.[3] F16K *15/04*; B60T *13/00*
U.S. Cl. 303—6 A 3 Claims



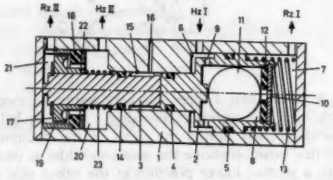
1. In a hydraulic system including a main hydraulic unit receiving hydraulic fluid from a reservoir, actuation means for actuating said main hydraulic unit, at least one remotely located fluid-responsive subsystem, at least one hydraulic line communicating said subsystem to said main hydraulic unit, said main hydraulic unit being in continuous fluid communication with said subsystems such that actuation of said main hydraulic unit by said actuation means causes the actuation of said subsystems by causing the injection of a discreet volume of fluid into said hydraulic line communicating said subsystem to said main hydraulic unit and deactivation of said main hydraulic unit retrieves said discreet volume of fluid from said hydraulic line to deactivate said subsystem, wherein the improvement comprises: a safety valve interrupting said hydraulic line in the proximity of said main hydraulic unit including a housing defining a generally cylindrical shaped chamber, said chamber having a first opening at one end of said chamber extending through said housing to said chamber and having a diameter less than said chamber such that the diameter transition of said chamber to said first opening is generally symmetric and non-dramatic creating a surface having a generally sloped cross-sectional contour, said first opening connecting with said hydraulic line leading to said subsystem, said chamber having a second opening at the opposing end of said chamber extending through said housing to said chamber; a generally spherical shaped member contained within said chamber having a diameter less than said chamber and greater than said first opening, said spherical member sized to permit the assumption of a mating relationship with said surface such that said first opening can be blocked; a cap fixably mounted in said second opening, said cap having a generally cylindrical passageway extending longitudinally therethrough, said passageway having a longitudinal axis parallel to and radially removed from said longitudinal axis of said chamber, said passageway connecting with said hydraulic line extending from said main hydraulic unit, said chamber having a generally vertical orientation such that said first opening is elevated with respect to said second opening and sized to contain said discreet volume of hydraulic fluid between said spherical member and said first opening.

4,236,760

BRAKE-FORCE REGULATOR FOR DUAL-CIRCUIT BRAKE SYSTEMS

Lucas H. Haar, Niddatal, and Ernst-Dieter Schäfer, Bad Nauheim, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,659
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814414
Int. Cl.[3] B60T *8/02*
U.S. Cl. 303—6 C 31 Claims



1. A brake-force regulator for a dual-circuit brake system comprising:

a housing having a longitudinal multiple-step bore therein;

a first stepped piston slidably sealed to the inner surface of said bore;

a second stepped piston slidably sealed to the inner surface of said bore, the end of the smaller diameter portion of said second piston directly abutting the end of the smaller diameter portion of said first piston under influence of a spring;

a first inlet chamber coupled to a master cylinder disposed adjacent a first annular surface between the larger diameter portion and the smaller diameter portion of said first piston;

a second inlet chamber coupled to said master cylinder disposed adjacent a second annular surface between the larger diameter portion and the smaller diameter portion of said second piston;

a first outlet chamber coupled to one of said brake circuits disposed adjacent the end of the larger diameter portion of said first piston;

a second outlet chamber coupled to the other of said brake circuits disposed adjacent the end of the larger diameter portion of said second piston;

a first valve associated with said first piston to connect said first inlet chamber to said first outlet chamber;

a second valve associated with said second piston to connect said second inlet chamber to said second outlet chamber; and

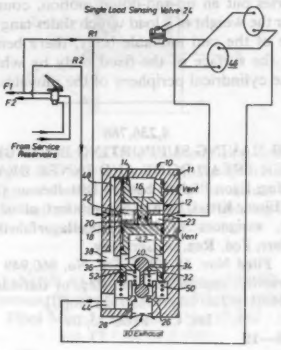
a first stop disposed transverse of said bore against which said second piston bears, said second piston keeping said second valve open when said second piston bears against said stop.

4,236,761

DUAL CIRCUIT BRAKING SYSTEM EMPLOYING SINGLE LOAD SENSING VALVE IN ONE CIRCUIT AND RELAY VALVE IN OTHER CIRCUIT

Wilbur M. Page, Lincoln, England, assignor to Clayton Dewandre Company Limited, Lincoln, England

Filed Nov. 24, 1978, Ser. No. 963,318
Int. Cl.³ B60T 13/00
U.S. Cl. 303—6 C 5 Claims



1. A fluid-pressure operated dual circuit braking system in which each circuit serves a rear axle brake and at least one front axle brake and comprising a load sensing valve incorporated in one circuit and a relay valve to which a modulated pressure is applied for controlling applied braking pressure in the other circuit, the relay valve having a piston which is responsive on opposite sides to the respective unmodulated pressure in the two circuits and which piston is normally in balance, the arrangement being such that in the event of a failure in the circuit incorporating the load sensing valve, the piston moves to a position in which it causes the unmodulated pressure in the said other circuit to be conducted directly to brakes on the rear axle, the first mentioned piston being a balancing piston and the relay valve also having an operating piston which is movable in response to the modulated pressure to actuate a valve member controlling the admission of pressure fluid to the brakes on the rear axle, and to which the said movement of the balancing piston is transmitted upon failure of the said one circuit, the pressure fluid control valve member which has the shape of a dumbbell being carried by the operating piston, and biased into contact, at one end, with a control valve seat on the operating piston, the control valve being actuated to admit pressure fluid to the brakes upon movement of the operating piston to bring the other end of the dumbbell valve member into engagement with an exhaust seating thereby closing off an exhaust connection with the brakes.

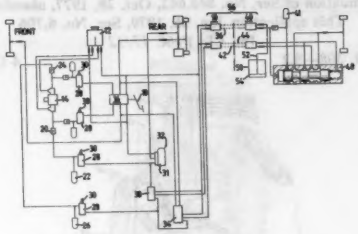
4,236,762

FULL POWER HYDRAULIC BRAKING SYSTEMS FOR TRACTOR-TRAILER COMBINATIONS

Michael J. Hawker, Lincoln, England, assignor to Clayton Dewandre Company Limited, Lincoln, England

Filed Dec. 4, 1978, Ser. No. 966,210
Int. Cl.³ B60T 13/00
U.S. Cl. 303—7 2 Claims

1. A full power hydraulic braking system for tractor-trailer combinations comprising a tractor braking circuit and a trailer braking circuit inter-connected by releasable hydraulic couplings, the tractor circuit including two brake circuits fed from a hydraulic pump, each embodying flow and return lines and a pressure storage unit, a dual brake valve metering pressure fluid from the pressure storage units in dependence upon applied pedal effort and a relay valve triggered by the outputs of the brake valve and metering pressure fluid to the brakes, the trailer circuit including a pressure storage unit, wherein an expansion chamber is connected into the trailer circuit so as to receive any fluid leaking into the return lines from the pressure storage unit of the trailer circuit when the hydraulic couplings



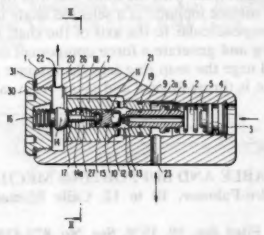
are uncoupled and to retain such fluid until the pump can return it to one of the pressure storage units when the hydraulic couplings are coupled.

4,236,763

BRAKE VALVE ESPECIALLY FOR MOTOR VEHICLES

Reinhard Resch, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 10, 1979, Ser. No. 2,379
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2802029
Int. Cl.³ B60T 15/06
U.S. Cl. 303—54 12 Claims



1. A brake valve, comprising a control piston actuatable at will for shifting a double valve means by way of a spring, said double valve means being operable upon actuation of the control piston to close a flow connection between a brake circuit means and a pressureless brake medium reservoir and being operable during further movement to open up an inlet between a pressure storage device containing a brake medium under pressure and the brake circuit means, characterized in that the double valve means includes a valve member and a valve piston, said valve member is constructed as a closure member having an at least partially spherical sealing area and a stem extending from the sealing area, means are provided for connecting an end of the stem remote from the sealing area to the valve piston so as to fix the closure member to the valve piston in a longitudinal direction but permit the closure member to be radially freely movable with respect to the valve piston whereby the valve member is centered with respect to an associated valve seat.

4,236,764

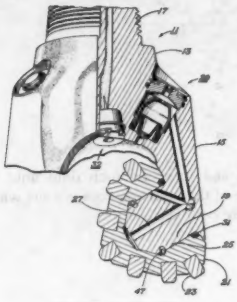
EARTH BORING DRILL BIT WITH SNAP RING CUTTER RETENTION

Edward M. Galle, Friendswood, Tex., assignor to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 846,642, Oct. 28, 1977, abandoned. This application Jan. 26, 1979, Ser. No. 6,706

Int. Cl.[3] F16C *17/12*

U.S. Cl. 308—8.2 4 Claims



1. In combination with an earth boring bit having at least one cantilevered bearing shaft rotatably supporting a sealed and lubricated cutter, an improved cutter retention means comprising:

friction bearing means between said cutter and shaft, including an inwardly facing thrust surface on the shaft;

one of said cutter and shaft having an assembly groove and the other having a registering, retainer groove;

a snap ring positioned in the registering grooves;

the retainer groove having a depth less than the cross-sectional thickness of the ring;

the assembly groove having a depth at least equal to the cross-sectional thickness of the ring, an outer sidewall and an inner sidewall, with the inner sidewall having a frustoconical surface inclined at a selected angle α relative to a plane perpendicular to the axis of the shaft to engage the snap ring and generate a force component oblique to said axis and urge the snap ring into the retainer groove when the cone is thrust inward and away from said thrust surface.

4,236,765

ROTATABLE AND SUPPORTING MECHANISMS

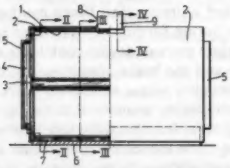
Enrique Pedro-Palomer, 10 to 12, Calle Idumea, Barcelona, Spain

Filed Jan. 18, 1978, Ser. No. 870,435

Claims priority, application Spain, Jan. 18, 1977, 455.146; Aug. 25, 1977, 461.891

Int. Cl.[3] F16C *7/04, 35/00*

U.S. Cl. 308—9 1 Claim



1. A rotary supporting mechanism comprising a pair of hollow bodies arranged one inside the other, there being a quantity of liquid between the two bodies, one of the said bodies remaining fixed while the other is movable rotationally and in an up-and-down direction with respect to the body which remains fixed, the liquid between the bodies absorbing loads applied to said movable body, the rotational axis of the movable body being arranged horizontally, and the hollow bodies comprising a pair of cylindrical bodies, the inner body being movable and buoyantly floating in the liquid contained in the outer body, the movable body rotating freely on a shaft whose ends are located in vertical guides formed in the ends of the fixed body, whereby the movable body, without ceasing to rotate, carries out an up-and-down motion, counteracting in this manner the weight of a load which slides tangentially over the surface of the said movable body, there being an upper opening in the surface of the fixed body by which the load contacts the cylindrical periphery of the movable body.

4,236,766

ROLLER HAVING SUPPORTING BODY BETWEEN OUTER TREAD BODY AND INNER BEARING

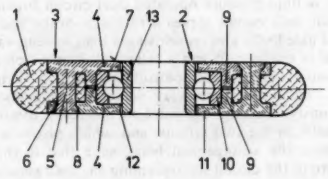
Hans Meining; Egon Pfaller, both of Dittelbrunn; Otmar Winkler, and Hilmar Kittel, both of Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,949

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 7735148[U]; Jul. 20, 1978, 7821746[U]

Int. Cl.[3] F16C *35/04*

U.S. Cl. 308—15 21 Claims



1. A roller comprising

a tread body made of an elastic material,

a supporting body, and

a rolling-element bearing having an outer ring and an inner ring disposed in said supporting body, said supporting body interconnecting said tread body and said bearing without axial play and including

two half shells, at least one of said shells having a plurality of pins distributed over a surface thereof and projecting axially of the tread body, said shells each having an axially projecting ring-shaped lug, the lugs of the two shells encircling and engaging opposite outer surfaces of the outer ring of the rolling-element bearing, said shells having radially inner rims engaging opposite sides of said outer ring, the other of said shells having apertures receiving said pins for connecting said other shell to said one shell.

4,236,767

DEVICE FOR SEALING AND MOUNTING A ROLLING-ELEMENT BEARING

Kurt Feldle, Würzburg, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Dec. 8, 1978, Ser. No. 967,886

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 7738870[U]

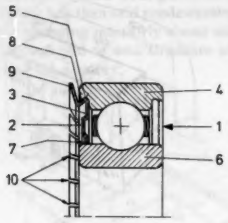
Int. Cl.[3] F16C *33/78*

U.S. Cl. 308—187.1 12 Claims

1. A device for sealing and mounting a rolling-element bearing having first and second bearing rings in a housing or on a shaft, comprising:

a sheet-metal disk secured to one of said first and second

bearing rings and having an annular portion extending toward the other of said first and second bearing rings and forming a seal therewith, said disk having a connector



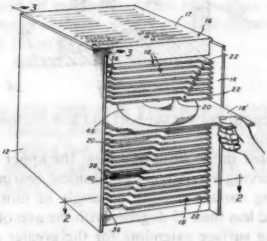
section for connecting it to said one ring and a second annular portion, said second annular portion having a diverging surface extending axially outward of said bearing at least before the rolling-element bearing is installed.

4,236,768

RECORD ALBUM FILING CABINET

James V. Morrone, 25 Sea Foam Ave., Winthrop, Mass. 02152

Filed Mar. 5, 1979, Ser. No. 17,482
Int. Cl.[3] A47B *81/00*
U.S. Cl. 312—10 **10 Claims**



1. A cabinet for filing phonograph records or the like comprising a body having sidewalls and a top, and a plurality of shelves positioned between the sidewalls in spaced parallel relation to each other a distance apart greater than the record thickness, each of said shelves having notch means providing access to an exposed edge of the record or record jacket, and means slideably supporting the shelves to permit the shelves to each be manually withdrawn to expose a record without jacket.

4,236,769

ROTATING DISPLAY STAND

Martin L. Mueller, 4929 E. Lake Shore Dr., Wonder Lake, Ill. 60097

Filed Mar. 8, 1979, Ser. No. 18,783
Int. Cl.[3] A47F *5/02*
U.S. Cl. 312—135 **27 Claims**

1. An apparatus for displaying and vending articles comprising:

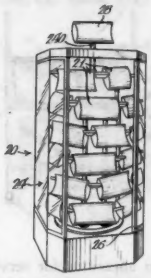
a base;

a plurality of article holding means disposed above said base for holding and displaying a plurality of said articles, each said article holding means having at least one cylindrical driven surface;

drive rod means mounted on said base for rotation relative thereto;

drive means on said base for rotating said drive rod means; and

friction engaging means secured to said drive rod means for rotation therewith and for engaging said cylindrical driven surface of each said article holding means whereby rotation of said drive rod means simultaneously rotates said friction engaging means against said cylindrical driven surface of each said article holding means to rotate



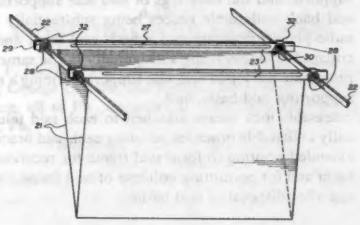
each said article holding means relative to said base and whereby, when a torque is applied to any one of said article holding means to arrest the rotation thereof during removal of an article, said friction engaging means slips relative to said one article holding means and continues to rotate the remainder of said article holding means.

4,236,770

GLIDE INSERT FOR HANGING FILE FOLDER SYSTEM

David C. Moore, Aurora; Edward W. Cooper, Scarborough, and Archibald Porteous, Willowdale, all of Canada, assignors to ACCO International Inc., Wheeling, Ill.

Filed Apr. 16, 1979, Ser. No. 30,320
Claims priority, application Canada, Apr. 26, 1978, 302031
Int. Cl.[3] A47B *63/00*; B24F *13/06*
U.S. Cl. 312—184 **7 Claims**



1. A plastic insert for hanger bars of file folder suspension systems which hanger bars include an elongated slit aperture adjacent each end, said plastic insert comprising:

a plate-like disc having a generally inverted U-shape, said disc having an upper base portion and two downwardly projecting leg portions, the edges of said disc having thickening ridges around the periphery of said U-shape;

a leg projecting upwardly from substantially the center of said upper base portion, said upwardly projecting leg terminating in a crown with said crown having projections at each side of said leg, said projections having bottom edges parallel to said base portion;

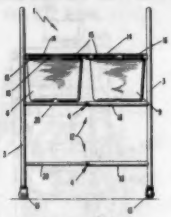
said upwardly projecting leg being adapted to be inserted through the aperture in the hanger bar and to retain said plastic insert in position with respect to the hanger bar.

4,236,771

PORTABLE DISPOSABLE BASIN APPARATUS

Geraldine Y. Summers, 721 - 22nd St., Newport News, Va. 23607

Filed Jan. 12, 1979, Ser. No. 3,398
Int. Cl.³ A47B *77/06*; A47K *1/04*; A47F *3/14*
U.S. Cl. 312—228 **9 Claims**



1. A portable basin apparatus for servicing incapacitated persons with materials and utensils at a place remote from the source of said materials and utensils, comprising:

a. an expendable basin including an integral flange horizontally extending from said basin at the top edge thereof for removebly supporting said basin in a frame, said basin being molded of a substantially rigid, insulating material in a form permitting the nesting of a plurality of said basins for storage; and

b. a wheeled, collapsible frame for supporting said basin, said frame comprising:

1. a pair of one-piece, tubular, vertically disposed side supports each having a front leg and a back leg, said legs being joined at the top thereof in a substantially U-shape;

2. a wheel mounted on the end of each said leg;

3. horizontally disposed, rigid braces secured to and interconnecting the front and back legs of each said side support, one said rigid brace being proximate said wheels of each said side support and one said rigid brace being proximate the top of each said side support;

4. horizontally disposed, telescopically collapsible braces secured to and interconnecting the front legs of said side supports, and the back legs of said side supports, front and back collapsible braces being substantially in the same plane proximate said wheels and front and back collapsible braces being substantially in the same plane proximate the top of said side supports forming a rim for supporting said basin; and

5. releasable lock means attached to each said telescopically collapsible brace for securing each said brace in an extended position to form said frame for receiving said basin and for permitting collapse of said frame for storage after disposal of said basin.

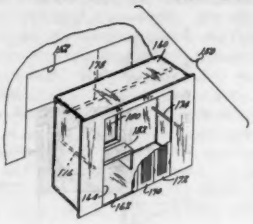
4,236,772

STORAGE SYSTEM

Artel R. Henson, Bloomfield Hills, Mich., assignor to Disco Engineering, Inc., Bloomfield Hills, Mich.

Division of Ser. No. 761,646, Jan. 24, 1977, Pat. No. 4,095,860. This application Jun. 16, 1978, Ser. No. 917,771
Int. Cl.³ A47B *87/00*
U.S. Cl. 312—242 **21 Claims**

1. A storage system comprising a prefabricated closet structure adapted to be mounted as a substantially unitized assembly within a complementary-shaped recess, said closet structure defining an access opening which is normally closed by at least



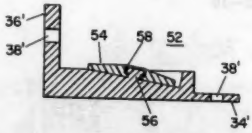
one door and including a mirror and an integrally constructed stool interiorly of said closet structure.

4,236,773

LOW FRICTION DRAWER SUPPORT

Paul M. Mertes, 15528 Don Metz St., Mission Hills, Calif. 91344

Filed Feb. 12, 1979, Ser. No. 11,177
Int. Cl.³ F16C *29/02*, *21/00*
U.S. Cl. 312—341 R **15 Claims**



1. A high strength drawer support and low friction slide and roller comprising:

a roller member in the form of a disk, the upper surface of said disk having a relatively flat conical bearing surface, said bearing surface making an angle of more than 60 degrees and less than 85 degrees with the axis of said disk, said bearing surface extending for the greater portion of the distance from the axis of said disk to the rim of said disk;

a housing structure for said roller member, said housing structure including means for supporting said roller member with its axis tilted with respect to the vertical and the bearing surface substantially horizontal, and said housing structure making surface-to-surface engagement with the lower side of said disk at substantial supporting areas spaced around the axis of said disk;

said housing structure including means for securing to a cabinet or other furniture with the bearing surface of said roller member oriented substantially horizontally to engage the lower outer edge of a drawer; and

means for securing said roller member in said housing structure.

4,236,774

ELECTRONIC APPARATUS CABINET ASSEMBLY

Raul Diaz, Baltimore, Md., assignor to Norlin Industries, Inc., Deerfield, Ill.

Filed Mar. 28, 1979, Ser. No. 24,508
Int. Cl.³ A47B *81/06*; H05K *5/00*
U.S. Cl. 312—351 **5 Claims**

1. A cabinet assembly for housing electronic apparatus comprising:

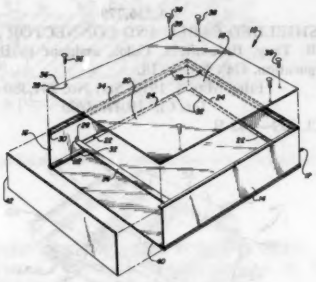
a generally U-shaped structure having a pair of opposed side walls and an end wall extending transversely therebetween, said walls coooprating for defining top and bottom ends of predetermined configuration and dimensions;

a deck member secured between said side and end walls near

the bottom end of said structure for supporting an item of electronic apparatus thereon;

a lid member having a configuration substantially conforming to said predetermined configuration and having dimensions slightly less than said predetermined dimensions;

a mounting rail extending interiorly about said side and end walls near the top end of said structure and adapted for supporting said lid member;



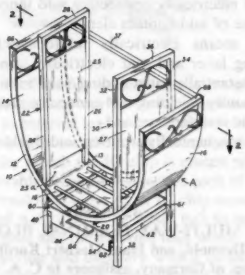
means forcing said lid member into compression against said mounting rail; and a strip of RFI sealing material disposed between said mounting rail and said lid member and extending upwards from the interstice formed between said walls and lid member onto the top surface of said lid and the exterior surfaces of said walls for forming an RFI seal of high integrity.

4,236,775

STORAGE HOLDER FOR FIREWOOD AND THE LIKE

Elwood W. Haynes, 6306 Pizzaro St., Duluth, Minn. 55807

Filed Jun. 8, 1979, Ser. No. 46,648
Int. Cl.³ A47F *7/00*; A47B *88/00, 83/00*
U.S. Cl. 312—351 **7 Claims**



1. A storage holder for firewood and the like comprising:

(a) a cradle having arcuate first and second opposed end walls spaced at the lower ends to form an opening therebetween,

(b) a first pair of spaced legs carried by and extending below said first end wall,

(c) a second pair of spaced legs carried by and extending below said second end wall,

(d) an intermediate wall extending between each of said first and second spaced legs,

(e) a receptacle,

(f) means for slidably supporting said receptacle below said opening,

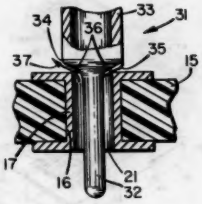
(g) means extending between the lower ends of said end walls at said opening for limiting the size articles that can pass through said opening into said receptacle.

4,236,776

ELECTRICAL CONTACT WITH IMPROVED MEANS FOR SOLDER WICKING AND DEGASSING

Roger D. Wellington, Cumberland, R.I., assignor to Augat Inc., Attleboro, Mass.

Filed Aug. 24, 1978, Ser. No. 936,485
Int. Cl.³ H05K *1/12*
U.S. Cl. 339—17 R **4 Claims**



4. An electronic interconnection panel board having a plurality of holes therethrough, said panel board comprising:

electrically conductive plating material lining said holes thereby effectively reducing their diameters;

a plurality of socket contacts, one of which is mounted in at least some of said plated holes in said panel board, each said contact comprising:

a cylindrical body having one open end and one closed end;

an elongated pin axially projecting from said closed end;

a conical transitional surface between said body and said pin;

a plurality of ribs substantially parallel to and projecting outwardly from said transitional surface, said pin extending through said plated hole; and

solder adhered to said plating material and said elongated pin and substantially filling the space therebetween;

whereby said ribs on said transitional surface engage the surface of the rim of the plating material in each of said holes, thereby providing escape paths for gases between said ribs and between said transitional surface and said rim.

4,236,777

INTEGRATED CIRCUIT PACKAGE AND MANUFACTURING METHOD

Joseph F. Merlina, Harrisburg; John P. Redmond, Mechanicsburg; George Ulbrich, and Richard M. Wagner, both of Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 27, 1979, Ser. No. 61,553
Int. Cl.³ H05K *1/11*
U.S. Cl. 339—17 CF **8 Claims**

1. Electrical contacting means for establishing electrical contact with the terminal areas of an integrated circuit chip, said terminal areas being at precisely predetermined locations on one surface of said chip, said contacting means comprising:

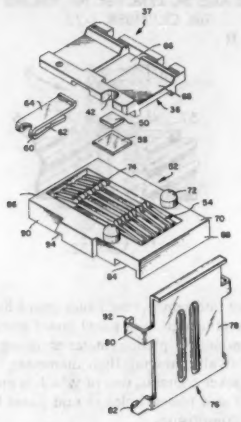
an insulating substrate of molded polymeric material having a flat surface,

a plurality of conductors in said substrate, each of said conductors having an upper surface which is coplanar with said flat surface and having a body portion which is beneath, an contained in said substrate, said conductors being of electrodeposited conductive metal,

a chip-receiving zone located centrally on said flat surface, each of said conductors having an inner end in said chip-receiving zone, said conductors extending from said chip-receiving zone and having outer end portions which are remote from said chip-receiving zone, and

each of said conductors having a contact promontory on its inner end, each of said promontories extending above said upper surface of its respective conductor and having a

substantially hemispherical surface, said promontories being precisely located relative to each other at locations corresponding to the locations of said terminal areas, each of said promontories being integrally electrolytically deposited with its respective conductor whereby,



upon placement of said one surface of said chip on said promontories with said promontories against said terminal areas of said chip, said conductors are placed in electrical contact with said terminal areas.

4,236,778

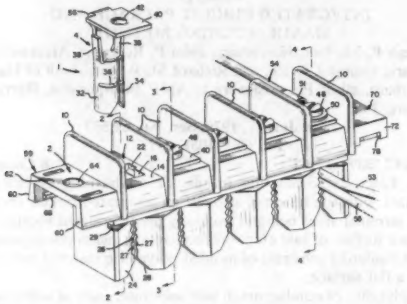
TERMINAL BLOCK

Richard L. Hughes, Clemmons; Melvin A. Soderstrom, Advance; Vasantrai A. Vachhani, and Lawrence P. Weisenburger, both of Kernersville, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 47,840, Jun. 12, 1970, abandoned. This application Jul. 30, 1979, Ser. No. 61,722

Int. Cl.³ H01R *9/24, 13/585*

U.S. Cl. 339—97 P **5 Claims**



1. A barrier block for commoning electrical wires or for providing a junction point for incoming and outgoing wires, comprising:

a housing having individual partition walls with adjacent pairs of said walls being interconnected by an integral web,

an electrical terminal mounted on a respective web having a vertical hollow cylindrical barrel provided with a longitudinal slot divided into one or more pairs of opposed wire engaging and gripping jaws,

each said terminal having a second wire receiving contact seated on a respective said web and connected to said barrel by an integral loop,

strain relief flanges integral with said partition walls and having sides projecting diagonally toward each other, and defining therebetween a vertical wire receiving slot in alignment with said barrel slot, said sides having opposed wavy outer edges providing a series of wire receiving concavities.

4,236,779

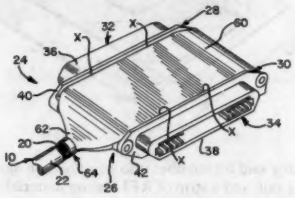
EMI SHIELDED CABLE AND CONNECTOR ASSEMBLY

Paul R. Tang, Broomfield, Colo., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 1, 1978, Ser. No. 901,380

Int. Cl.³ H01R *3/06*

U.S. Cl. 339—143 R **14 Claims**



1. A shielded connector assembly comprising:

a connector member including an electrically conductive housing, a plurality of contact elements, a mating portion for engaging a compatible connector member, and a conductor receiving terminal portion;

a shielded electrical cable interconnected with said connector member and including a plurality of conductors and electrically isolated inner and outer EMI shielding layers surrounding said conductors, said conductors being terminated to said contact elements in said connector terminal portion;

means for electrically connecting said inner shielding layer with one of said contact elements;

shielding means electrically interconnecting said outer shielding layer and said electrically conductive housing and substantially surrounding said terminal portion for continuously shielding said connector means from electromagnetic interference; and

means for mechanically securing said shielding means to said cable.

4,236,780

MULTI-WAY TERMINAL BLOCK

Paul Stenz, Detmold, and Hans-Herbert Kordt, Osterode, both of Fed. Rep. of Germany, assignors to C. A. Weidmuller KG, Detmold, Fed. Rep. of Germany

Filed Apr. 2, 1979, Ser. No. 26,258

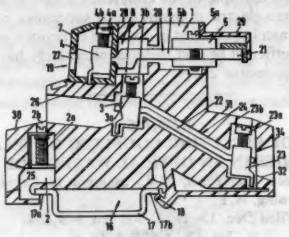
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 7811450[U]

Int. Cl.³ H01R *9/26*

U.S. Cl. 339—198 G **9 Claims**

1. A triple rail mounted terminal block with terminals for a neutral conductor, a protective conductor and a phase conductor, all arranged in a terminal housing, having an upper surface and a front face, said terminals being arranged in respective superimposed planes, conductor insertion openings terminating at said front face of said terminal block and access openings for tools for actuating said terminals terminating on said upper surface of said terminal block, the actuating member of a said terminal located in the intermediate plane being disposed, considered from said front face of said terminal block, offset into the interior of said terminal block beyond said actuating

member of the terminal in the upper plane, and its tool access opening is a passage which extends past the current conductor



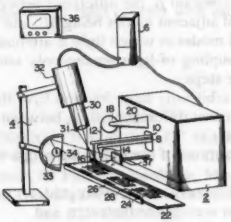
of the terminal located in the upper plane and is isolated therefrom.

4,236,781

ILLUMINATION SYSTEM FOR SPECIMEN

Yoshiaki Arimura, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 770,792, Feb. 22, 1977, abandoned.
This application Feb. 14, 1979, Ser. No. 11,992
Claims priority, application Japan, Feb. 23, 1976, 51-18018
Int. Cl.³ G02B *21/06*
U.S. Cl. 350—81 **11 Claims**



10. A bonding machine for connecting pattern pads of an IC chip having a substantially mirror surface portion and coarse surface portions to external lead wires of an IC chip mounting frame, using bonding wires, the machine comprising:

a capillary under which the IC chip is placed and the tip of which is movable between the pattern pads of the IC chip and the external lead wires of an IC chip mounting frame and provided with a welding metal ball to be bonded to the pattern pads and the external lead wires;

means for supplying said capillary with a metal wire;

a heater for heating the metal wire supplied to the tip of said capillary to provide a welding metal ball;

a microscope so positioned as to have its optical axis inclined to the surface of the IC chip;

an illumination apparatus for illuminating the IC chip, including light projecting means for projecting a bundle of light rays and a light diffusion plate disposed close to the IC chip for converting the bundle of light rays from the light projecting means into diffused light and projecting the diffused light onto the IC chip; and

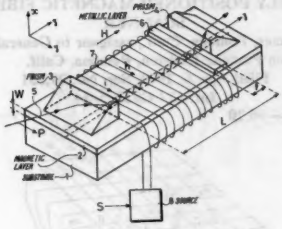
means for guiding the IC chip mounting frame with a number of IC chips mounted and placing one of IC chips at such a predetermined position under said capillary that most light rays reflected from the mirror portion of the IC chip are directed outside an objective lens of said microscope and light rays scattered from the coarse surface portions of the IC chip are projected onto the objective lens of the microscope.

4,236,782

DEVICE FOR MODULATING OPTICAL RADIATION BY A VARIABLE MAGNETIC FIELD

Jean-Paul Castera, and Georges Hepner, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 30, 1978, Ser. No. 921,226
Claims priority, application France, Jul. 8, 1977, 77 21189
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.13 **10 Claims**



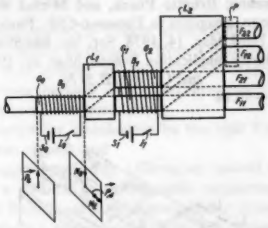
1. A device for modulating optical radiation by a variable magnetic field, said device comprising a wave guide formed by a thin magnetic layer and a substrate, said magnetic layer being deposited on said substrate with a constant thickness and being capable of propagating first and second modes of radiated energy; said device further comprising means for exciting energy of said first mode in said magnetic layer, means for inducing a variable magnetic field parallel to the direction of propagation of said energy to enable at least a fraction of said energy to be converted from said first mode to said second mode, mode absorbing means arranged on said magnetic layer for selectively transmitting the energy of one of said first and second modes and means arranged for extracting from said magnetic layer the energy supplied in one of said modes by said mode absorbing means.

4,236,783

ELECTRICALLY-CONTROLLED OPTICAL BRANCH CONNECTION

Georges Hepner, and Jean-Paul Castera, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 5, 1978, Ser. No. 967,255
Claims priority, application France, Dec. 9, 1977, 77 37228
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.13 **13 Claims**



1. An electrically controlled optical branch connection for optical fibres comprising an input fibre and at least two output fibres and a plurality of adjacent basic cells, each of which cells comprises at least one radiation guide coupled to said input fibre capable of introducing under electrical control, a change in the direction of polarization of an input optical radiation linearly polarized, the radiation having thus one of two possible directions of polarization, and a birefringent plate having a length, capable of ensuring the propagation of linerly polarized radiation along one of two directions according to the direc-

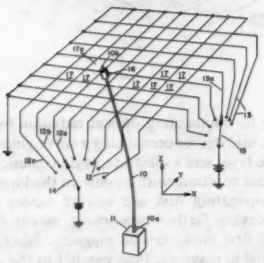
tion of polarization of the radiation transmitted thereto, the radiation emerging from said plate after porpagation along one and the other directions being spatially separated by a distance proportion to said length, said guide and said plate being fixed one relative to the other and said two possible directions of polarization at the output of said guide respectively corresponding to said two propagation directions in said plate.

4,236,784

DISCRETELY POSITIONED MAGNETIC FIBER OPTIC SCANNER

John P. Palmer, Pomona, Calif., assignor to General Dynamics Corporation Pomona Division, Pomona, Calif.

Filed Apr. 6, 1979, Ser. No. 27,551
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.20 **13 Claims**



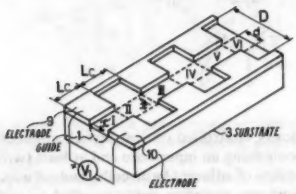
1. A magnetic fiber optic scanner comprising:
a flexible optical fiber having one end fixedly supported and an opposite end that is unsupported and free to move;
means mounted on said fiber near said unsupported end for there producing a first magnetic field;
an array of electrical conductors extending substantially perpendicular to said fiber adjacent to said unsupported end; and
means for generating current through selectable ones of said conductors to produce localized second magnetic fields that interact with the first magnetic field and cause the unsupported end of said optical fiber to move in discrete increments.

4,236,785

NON LINEAR THIN LAYER OPTICAL DEVICE

Michel Papuchon; Brigitte Puech, and Michel Werner, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 14, 1978, Ser. No. 886,594
Claims priority, application France, Mar. 23, 1977, 77 08628
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.14 **7 Claims**



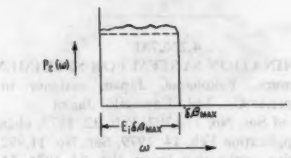
1. A non-linear optical device for generating a non-linear interaction between optical radiations propagated along a direction z in an homogeneous thin layer of ferro-electric material, said device comprising a thin layer made of ferro-electric domains and a first pair of electrodes deposited on said layer; said electrodes being arranged opposite one another and having a periodic shape delimiting a succession of odd and even zones of length L on said layer in said direction z, L being equal to an odd multiple of the coherence length of said interaction; the ferro-electric domains of the successive zones having been alternately polarised in opposite directions; so that the non-linear coefficient of said material alternately has opposite signs in the successive zones.

4,236,786

METHOD OF EFFECTING COUPLING OF SELECTED MODES IN AN OPTICAL WAVEGUIDE

Donald B. Keck, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 13, 1978, Ser. No. 969,233
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.15 **13 Claims**



1. For an optical waveguide supporting light transmission in a plurality of bound modes, said modes each corresponding to a propagation constant β, the difference between the propagation constant of adjacent modes being $\delta\beta$, and further a plurality of unbound modes in which light is attenuated, the method of effecting coupling of light among only said bound modes, comprising the steps:
selecting an arbitrarily large fraction E_i of the largest propagation constant difference $\delta\beta_{max}$ between adjacent bound modes; and
varying at least one of the following properties of the waveguide:
curvature of the axis of the waveguide,
fluctuation in waveguide diameter, and
fluctuation in the indices of refraction of the waveguide, at at least one location along the length of the waveguide in accordance with the expression

$$\left|\frac{K(E_i\delta\beta_{max}z)}{E_i\delta\beta_{max}z}\right|^t$$

where K is a specific function the inverse transform of which is substantially zero for a value $E_i\beta$ which is arbitrarily close to $\delta\beta_{max}$, t is at least 1, and z represents distance along the waveguide.

4,236,787

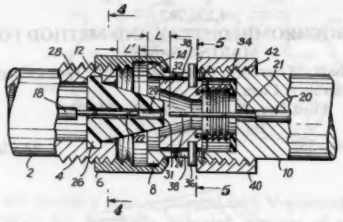
OPTICAL FIBER CONNECTOR

Frederick D. Iacono, Crestwood, and Louis Danielle, Yonkers, both of N.Y., assignors to Kings Electronics Co., Inc., Tuckahoe, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,299
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.21 **8 Claims**

1. A connector for optical fiber cables comprising male and female connector sections fixedly supporting opposed ends of the cables: to be connected in which said female section includes an externally threaded cylindrical casing and said male section includes a cylindrical casing having at one end a rotatable internally threaded cylindrical ring adapted to engage said externally threaded casing for pulling said sections into tight

contact, the improvement comprising a frusto-conical elastic member having a central opening therethrough adapted to receive one end of an optical fiber cable, the base of said frusto-conical elastic member being radially supported within the casing of said female section with its tapered end projecting beyond the female section in the direction of the male section, means within said male section holding the end of a second optical fiber cable in alignment with the central opening in said frusto-conical elastic member, the respective ends of said fiber



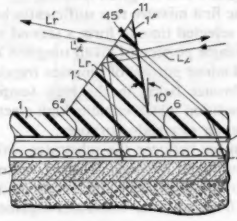
optical cables being so positioned within said male and female sections that when said sections are pulled into tight contact, the end of said second optical fiber cable enters the central opening of said frusto-conical elastic member to a depth placing it in close contact with the end of the first optical fiber cable, and means supported by said male section for radially compressing said frusto-conical elastic member inwardly about the adjacent ends of the two optical fiber cables after the male and female sections are in tight contact with each other.

4,236,788

DIRECTION-INDICATING SURFACE MARKER STRIP FOR ROADWAYS AND THE LIKE

Charles W. Wyckoff, 85 Pine St., Needham, Mass. 02194

Filed Oct. 23, 1978, Ser. No. 953,947
Int. Cl.³ G02B 5/12
U.S. Cl. 350—97 **8 Claims**



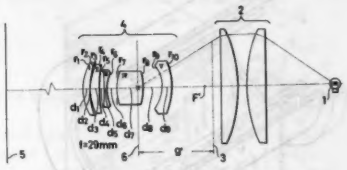
1. A direction-indicating surface marker strip for securing to a surface-to-be-marked, having, in combination, a thin upper light-transmitting layer comprising a plurality of longitudinally spaced saw-tooth asymmetrical prisms each having upwardly and downwardly inclining faces adjusted to provide for critical angle downward internal reflection of light entering one of the faces, and refraction to the space between successive prisms of light entering the other face; a thin lower layer of retroreflective material secured to the upper layer; and means disposed in the areas below the prisms for imbuing the light entering the retroreflective material in said areas as a result of said downward internal reflection, with a predetermined color as it is returned by retroreflection and internal reflection back through said one face.

4,236,789

PROJECTION OPTICAL SYSTEM

Yu Yamada, Kokubunji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 10, 1977, Ser. No. 823,428
Claims priority, application Japan, Aug. 12, 1976, 51-96558
Int. Cl.² G02B 15/04
U.S. Cl. 350—183 **6 Claims**



1. A projection optical system comprising the following components arranged in sequence from a light source:

a condenser lens system for causing convergence of light from the light source and then directing the light in a predetermined direction;

a record carrier for illumination by the light from the condenser lens system; and

a projecting lens assembly defining an optical axis and including a pair of interchangeable projecting lenses of different focal lengths interchangeably arranged on the optical axis for causing light coming through the record carrier to converge onto a projection plane;

said projection lens having a longer focal length in said lens assembly being a telephoto type lens and the projection lens having a shorter focal length being a Gauss type, said projection lenses being located and constructed so as to make the position of the pupil point of the lens having the longer focal length near the record carrier almost equal to the position of the pupil point of the lens having the shorter focal length on the record carrier;

said telephoto type lens, from the direction of the projecting plane, including two positive meniscus lenses having their convex faces directed to the projecting plane, a concavo-concave lens, a convexo-convex lens and a negative meniscus lens having its convex face directed to the record carrier.

3. A projection optical system comprising the following components arranged in sequence from a light source:

condenser lens system for causing convergence of light coming from the light source and then directing the light in a predetermined direction;

a record carrier for illumination by the light from the condenser lens system; and

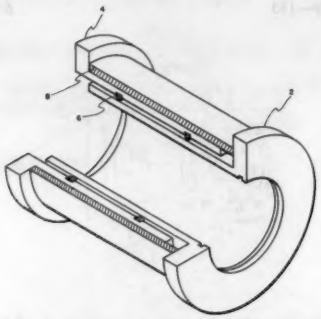
a projecting lens assembly defining an optical axis and including a pair of interchangeable projecting lenses of different focal lengths interchangedably arranged on the optical axis of the optical system for causing the light through the record carrier to converge onto a projection plane, one of said projection lenses having a longer focal length in said lens assembly and one of said lenses having a shorter focal length;

said projecting lens assembly having a diaphragm said projection lens having the longer focal length having means for making the position of the pupil point thereof near the record carrier relative to the postion of the diaphragm of the lens having a longer focal length in order to make the position of the lens having a longer focal length equal to the position of the lens having a shorter focal length.

4,236,790
TEMPERATURE COMPENSATED POSITIONING DEVICE

Ronald D. Smith, Oriskany, N.Y.

Filed May 15, 1978, Ser. No. 905,822
Int. Cl.³ G02B 7/02
U.S. Cl. 350—253 **6 Claims**



1. A temperature compensated positioning device for automatically maintaining a first surface and a second surface in a precise dimensional relationship with respect to one another over a desired temperature range which comprises:

a stationary member attached to said first surface;

a movable member attached to said second surface, said movable member being partially positioned within said stationary member to have freedom of axial movement;

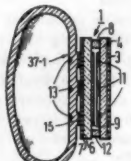
a temperature compensating non-metallic material contiguous to the axial length of said stationary member affixed at one end to said stationary member and affixed at its opposite end to said movable member, said temperature compensating material changing in dimensions as a function of temperature whereby the changes in dimensions cause axial movement of said movable member with respect to said stationary member; and

support means comprising at least one "O" ring positioned between said stationary member and said movable member to provide radial centering and support so that said compensating material is not required to carry any structural loads.

4,236,791
LIQUID CRYSTAL ILLUMINATOR HAVING ELLIPOIDAL LIGHT GUIDE

Hans Krüeger, and Werner Glaubitz, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 25, 1978, Ser. No. 909,553
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1977, 2724748
Int. Cl.³ G01F 1/133
U.S. Cl. 350—345 **1 Claim**

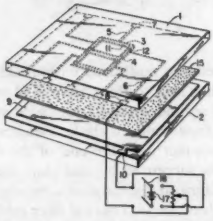


1. An optical element comprising a fluorescent body system which is made of a material having an index of refraction of greater than one, has the form of a hollow ellipsoid of revolution, contains fluorescent particles and possesses at least one output coupling zone, said body system having at least two integral fluorescent body portions with one of the body portions having the output coupling zone, the remaining body portions being offset from the one body portion and being interconnected thereto by a smooth curved surface, said remaining body portions being operable for the interception of incident radiation remote from said coupling zone and for the guidance of resultant optical radiation to said output coupling zone.

4,236,792
ELECTROCHROMIC DISPLAY AND METHOD FOR MAKING SAME

Saadi J. Bissar, Waterbury, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Dec. 28, 1978, Ser. No. 973,832
Int. Cl.³ G02F 1/17
U.S. Cl. 350—357 **32 Claims**



1. A process for making an electrochromic display comprising the steps of:

(a) providing a front substrate having transparent electrodes and image-forming electrochromic layers thereon;

(b) providing a rear substrate for carrying a counter electrode, the front and rear substrates being positioned in spaced working relation;

(c) forming a counter electrode on said rear substrate by

1. forming a layer of tungsten trioxide on said substrate;
2. converting a major portion of said tungsten trioxide layer to alkali tungstate to provide a first mixture of alkali tungstate and tungsten trioxide;
3. heating the first mixture to a sufficiently high temperature for a selected time to form a second mixture comprising a major portion of alkali tungsten bronze and a controlled minor portion of tungsten trioxide, the alkali tungsten bronze being in the high temperature heat treated condition which exhibits high electronic mobility for counter electrode purposes;

(d) filling the space between the substrates with electrolyte containing sufficient cationic coloring centers to impart coloration to said electrochromic layers; and

(e) sealing the front and rear substrates together.

4,236,793
OPHTHALMIC REFRACTING DEVICE

Donald B. Whitney, Southbridge; Bernard Grolman, Worcester, and William Richards, Medway, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of Ser. No. 891,774, Mar. 30, 1978, abandoned. This application Sep. 25, 1978, Ser. No. 945,168
Int. Cl.³ A61B 3/04; G02C 7/08; G03B 1/00
U.S. Cl. 351—21 **2 Claims**

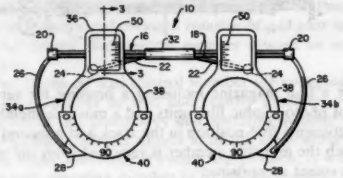
1. A refracting fixture comprising the combination of:

a main supporting bar;

a pair of trial lens holders suspended right-angularly from said bar, said holders being individually adjustable along a portion of the length of said bar and in directions across said bar, means for maintaining said right-angular dispo-

sition of said holders at all positions of adjustment along and across said bar;

means for manually detachably connecting said bar and trial lens holders to a spectacles frame with said holders disposed forwardly of lens supporting rims of said frame, said connecting means including locaters on said fixture for engaging uppermost brow portions of said spectacles frame to establish parallelism of said fixture and frame when said bar and trial lens holders are connected thereto



and clamping arms terminated with V-grooved clamping block for terminally engaging portions of said frame below said brow portions to retain said locaters in place against said brow portions when said connection of said bar and trial lens holders is made, said locaters comprising a pair of rollers carried by wires extending from said main supporting bar and said clamping arms being proximally fixed to said main supporting bar with respective extensions thereof directed arcuately downwardly away from said bar to said clamping blocks.

4,236,794

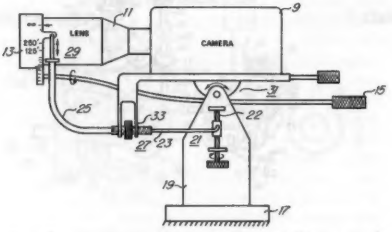
SELF-FOCUSING CAMERA APPARATUS AND METHOD

Gary B. Gordon, 21112 Bank Mill Rd., Saratoga, Calif. 95070

Continuation-in-part of Ser. No. 901,564, May 1, 1978, Pat. No. 4,152,061. This application Mar. 5, 1979, Ser. No. 17,448

Int. Cl.³ G03B *3/10*

U.S. Cl. 354—25 **5 Claims**



1. Camera focusing apparatus for a camera having an adjustable-focus lens operated from a position above a horizontal object plane, the apparatus comprising:

mounting means disposed to support the camera for altering the pointing direction thereof at least in a vertical plane;

angle-sensing means coupled to the camera for producing an output representative of the camera-pointing direction within a vertical plane with respect to level orientation of the camera;

scaling means for altering said output by a constant of proportionality to provide an altered output which is representative of the height of the camera above the object plane; and

actuating means for converting said altered output to focus-adjusting motion of the lens of the camera.

4,236,795

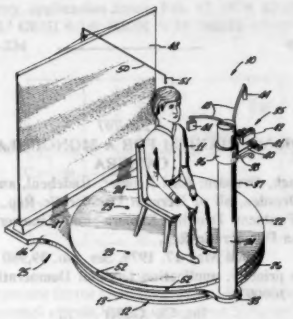
PRECISION PHOTOGRAPHIC DOCUMENTATION APPARATUS

Richard E. Kephart, Balboa Island, Calif., assignor to H. George Brennan, Newport Beach, Calif.

Filed Jan. 18, 1979, Ser. No. 4,399

Int. Cl.³ G03B *29/00, 15/00, 17/00*

U.S. Cl. 354—80 **11 Claims**



1. Apparatus for use in photographing a subject comprising:

a stationary plaform for supporting said subject in the center thereof;

a turntable mounted beneath said platform for rotation about an axis aligned with said center of said platform;

a vertical post mounted adjacent one side edge of said turntable for rotation around said platform;

means for mounting a camera on said post; and

a vertical photographic backdrop mounted on an opposite side edge of said turntable for rotation around said platform with said camera mounting means on an opposite side of said subject.

4,236,796

PHOTOGRAPHIC CAMERA PROVIDED WITH FLASH MEANS

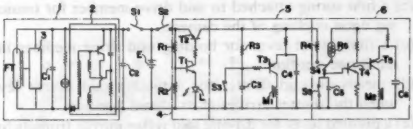
Toshio Hayashi, and Toshinori Imura, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 14, 1979, Ser. No. 12,197

Claims priority, application Japan, Feb. 21, 1978, 53-19460

Int. Cl.³ G03B *7/16, 9/08, 9/40, 15/05*

U.S. Cl. 354—145 **13 Claims**



11. A flash means for cameras, comprising a power supply means; a flash tube; a first capacitor connected to said flash tube for firing said flash tube upon discharge of said first capacitor; an oscillating type electronic boosting circuit having input terminals connected to said power supply means for being electrically suppled therefrom and output terminals connected to said first capacitor to impress thereon a high voltage through oscillating operation thereof such that said first capacitor is charged to a voltage level ready for firing said flash tube for causing it to emit a sufficient amount of light for taking the desired photographic picture; a second capacitor connected to said power supply means in parallel with said first capacitor and said electronic voltage boosting circuit and connected between said power supply means and said input terminals of

said electronic voltage boosting circuit; and a voltage detecting means for detecting whether the voltage level of said power supply means has recovered to a predetermined level during the course of the charging of said first capacitor, said predetermined level being such that said first capacitor has been charged to the voltage level ready for firing said flash tube for causing it to emit a sufficient amount of light for taking the desired photographic picture.

4,236,797

MIRROR MECHANISM FOR A MONOCULAR REFLEX CAMERA

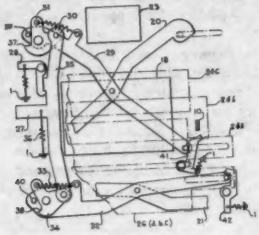
Rolf Noack, Dresden; Karl Krömer, Radebeul, and Hans Zimmet, Dresden, all of German Democratic Rep., assignors to VEB Pentacon Dresden Kamera- und Kinowerke, Dresden, German Democratic Rep.

Filed May 17, 1979, Ser. No. 39,980

Claims priority, application German Democratic Rep., Jun. 19, 1978, 206097

Int. Cl.³ G03B *19/12*

U.S. Cl. 354—152 **3 Claims**



1. A lamellar focal-plane shutter for monocular mirror reflex cameras having a swivelling viewfinder mirror movable between a first viewing position in the optical path of the camera and a second position clear of said path for exposure and shutter blades which return automatically to their starting positions after each exposure operation, comprising:

(a) a drive member for returning said shutter blades and movable between a rest position and a tensioned position,

(b) a first spring attached to said drive member for tensioning upon cocking of the camera,

(c) a first detent lever for holding said drive member in a tensioned position,

(d) means on said shutter for actuating said detent lever when the shutter arrives at its closed position,

(e) a pivoted lever for driving said reflex mirror from its first position to its second position,

(f) a second spring connected to said pivoted lever to urge the reflex mirror towards its second position,

(g) a second detent lever for holding said pivoted lever in a cocked position against the action of said second spring, and

(h) an arm disposed on said drive member and engageable with said pivoted lever to drive the latter during a return movement of the drive member to its rest position,

whereby on release of said drive member the latter moves under the tension of said first spring to drive simultaneously said shutter blades into their starting positions and to drive said pivoted lever against the action of said second spring permitting the reflex mirror to return to its first position.

4,236,798

FILM PACK

Robert A. Sylvester, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 15, 1979, Ser. No. 84,474

Int. Cl.³ G03B *17/50, 19/10, 17/26*

U.S. Cl. 354—181 **9 Claims**

7. In a film magazine including a housing for receiving a stack of photographic film units and a movable member movable between a first position in the stack and a second position in which the movable member is removed from the stack; the improvement comprising:

means for guiding said movable member from its second position to a position in the stack between the top film unit and the next film unit, and

means on said movable member for engaging the top film unit and moving that unit from the stack upon movement of said movable member from its position in the stack toward its second position.

4,236,799

UNWINDING-MECHANISM RELEASING DEVICE FOR USE IN A CAMERA

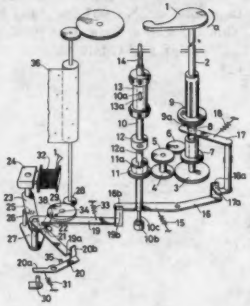
Takumi Kobayashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1978, Ser. No. 911,579

Claims priority, application Japan, Jun. 1, 1977, 52-64221

Int. Cl.³ G03B *1/24, 17/42*

U.S. Cl. 354—209 **1 Claim**



1. An unwinding-mechanism releasing device for use in a camera of the type having a clutch mechanism interposed between a winding mechanism and a sprocket, said mechanism being brought into engaged and disengaged conditions, and a locking member movable between a first position and a second position in which it retains said clutch mechanism in a disengaged condition, and an electromagnet for releasing a shutter, the improvement comprising:

first biasing means for biasing said locking member toward said second position;

a pivotably mounted operating member pivotable between a releasing position in which it retains said locking member in its first position and a locking position in which said locking member is permitted to assume said second position, said operating member being retained in said locking position by said electromagnet until the end of the shutter operation at which time the electromagnet is operated to

permit movement of said operating member from its locking position to its release position;

gear means rotatable during shutter operation and having a pin thereon which, when said gear means is permitted to rotate, will abut said operating member at the end of rotation of said gear means to thereby urge said operating member to its locking position;

a control member pivotably mounted coaxially with said operating member and pivotable between a first position in which rotation of said gear means is permitted and a second position in which an end portion of said control member engages and prevents rotation of said gear means;

means for biasing said control member toward its second position;

abutment means on said control member for engaging said operating member so that said control member will be moved to its first position by said operating member when said operating member moves to its release position;

retaining means movable between a first position, in which it holds said operating member in its release position, and a second position in which it releases said operating member, said retaining means being biased toward its first position; and

means for moving said retaining means to its second position at the termination of lifting movement of a mirror, thereby mechanically releasing said operating member to thereby permit said operating member, when released by said electromagnet, to move to said release position under the force of said first biasing means, thereby moving said control member to its first position and permitting rotation of said gear means, said abutment means engaging said operating member at the completion of shutter operation to thereby move said operating member back to its locking position.

4,236,800

CAMERA FILM STOP POSITION ADJUSTING MECHANISM

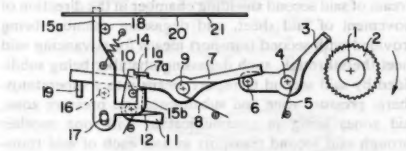
Mitsuo Satoh, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1979, Ser. No. 59,701

Claims priority, application Japan, Aug. 22, 1978, 53/115095[U]

Int. Cl.³ G03B *1/14*

U.S. Cl. 354—213 **7 Claims**



1. A film stop position adjusting mechanism comprising:

a stop lever (**3**) engagable with a ratchet gear (**2**) and adapted to stop the feeding of a film having a protrusion;

a ratchet releasing lever (**7**) for holding said stop lever (**3**) at a release position, said ratchet releasing lever having a bent portion (*7a*);

a locking lever (**11**) having a step (*11a*) engaging said bent portion (*7a*) of said ratchet releasing lever to lock said ratchet releasing lever;

a detection lever having a protrusion (*15a*) insertable into a perforation of said film to detect a film stop position, and an arm (*15b*) having a straight edge portion and

said locking lever (**11**) provided with a pin (**10**) whose position can be adjusted by rotation, said pin engaging with said arm (*15b*) of said detection lever adapted to detect a film stop position by insertion of said protrusion (*15a*) into a film perforation, and wherein said film stop position is adjusted by changing the timing at which said step (*11a*) is disengaged from said bent portion (*7a*).

4,236,801

EXPOSURE FACTOR SWITCHING CIRCUIT

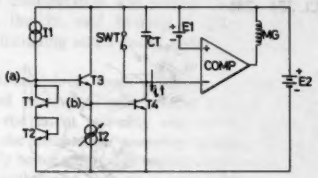
Satoshi Takami, Eiza, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1979, Ser. No. 12,422

Claims priority, application Japan, Feb. 17, 1978, 53-19390[U]

Int. Cl.³ G03B *9/08*; H03K *5/13*; H01H *47/32*

U.S. Cl. 354—234 **9 Claims**



1. For an exposure factor switching circuit for a camera with an exposure control circuit having an emitter follower transistor applying a voltage through at least one transistor which is driven by a current flowing in the emitter thereof, a time constant circuit controlling a shutter control magnet with an integration voltage due to a collector current of a second transistor, the output of said emitter follower transistor being applied to the base of said second transistor, the improvement comprising; a bias current supplying circuit comprising a plurality of transistors, one transistor of said plurality of transistors being emitter coupled to an exposure factor switch, said bias current supply coupled to the emitter of said emitter follow transistor, and wherein said switch is operated to selectively activate said plurality of transistors to vary the emitter current of said emitter follower transistor.

4,236,802

SAFETY DEVICE FOR CAMERA

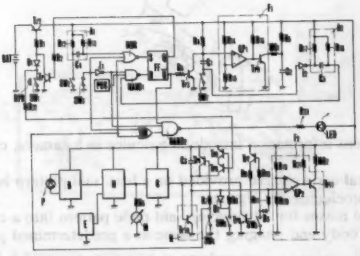
Masanori Uchidoi, Yokohama; Masaharu Kawamura, Kawasaki; Yoshihiro Shigeta, Tokyo; Yoji Sugiura; Hiroshi Yamamoto, both of Yokohama, and Nobuo Tezuka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,800

Claims priority, application Japan, Sep. 14, 1978, 53-113047

Int. Cl.³ G03B *17/38, 17/18*

U.S. Cl. 354—268 **12 Claims**



1. A safety device for a camera having a count switch to be switched over out of a first state into a second state with shutter release operation and a timing circuit for starting clock operation when the count switch has assumed the second state comprising:

means (NOR) for detecting the state of the count switch so as to prevent the release operation when the count switch

has assumed the second state before the release operation is initiated.

4,236,803

LENS FOR A CAMERA PROVIDED WITH CODE PATTERNS

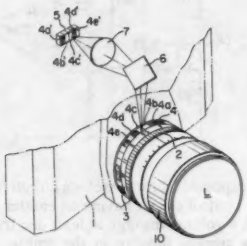
Jun Shimomura, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 12, 1979, Ser. No. 56,857

Claims priority, application Japan, Jul. 12, 1978, 53/83943; Jul. 12, 1978, 53/83944

Int. Cl.³ G03B *7/093, 17/00, 17/18*

U.S. Cl. 354—286 **15 Claims**



9. A lens for use with a camera body having an optical system for imaging a predetermined position of the outer peripheral portion of the lens within the camera body, and a processing device for reading the lens information by a signal from photoelectric converter means provided at the image forming position of said optical system, said lens including;

n bits of code patterns provided at the predetermined position of the outer peripheral portion of the lens, said patterns representing the lens information.

4,236,804

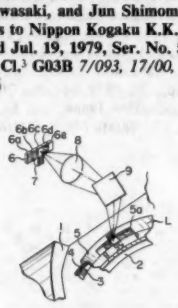
LENS INFORMATION INTRODUCING DEVICE HAVING CORRECTED EXTRANEOUS LIGHT

Kenji Toyoda, Kawasaki, and Jun Shimomura, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 19, 1979, Ser. No. 59,037

Int. Cl.³ G03B *7/093, 17/00, 17/18*

U.S. Cl. 354—286 **8 Claims**



1. A lens information introducing device in a camera, comprising:

a digital code pattern provided on a lens, said pattern being photoelectrically legible;

optical means for introducing said code pattern into a camera body and imaging the same at a predetermined position;

photoelectric converter means disposed at said predetermined position, said photoelectric converter means being effective to photoelectrically converting the image of said code pattern formed by said optical means; and

shaping means for comparing the photoelectrically converted signal by said photoelectric converter means with a standard signal and producing the lens information indicated by said code pattern as a digital signal, said standard signal depending on the brightness of illuminating light onto said code pattern.

4,236,805

DEVELOPING APPARATUS FOR THE DRY DEVELOPMENT OF PHOTOSENSITIVE SHEET MATERIAL

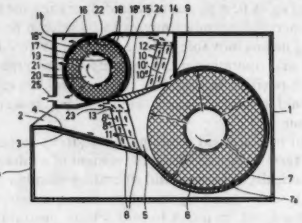
Walter Fries, Hofbachstr, 12, 59 Siegen 21, Fed. Rep. of Germany

Filed May 7, 1979, Ser. No. 36,758

Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820133

Int. Cl.³ G03D *7/00*

U.S. Cl. 354—300 **8 Claims**



1. In a device for developing an exposed sheet with a gas or vapor in a dry developing process, the improvement which comprises in combination:

a housing formed with a developing chamber, a first transport means in said developing chamber, and means for contacting said sheet in said developing chamber with a developing agent, said developing chamber having an inlet and an outlet for said sheets;

a first shielding chamber at said inlet in said housing and a second shielding chamber at said outlet in said housing for blocking the escape of said agent from said developing chamber, each of said shielding chambers being formed with a plurality of curtains defining between them respective compartments successively traversed by the sheet, and means for evacuating the compartments of each of said shielding chambers; and

means defining a degassing chamber in said housing downstream of said second shielding chamber in the direction of movement of said sheet, said degassing chamber being provided with second transport means for advancing said sheet therethrough, such degassing chamber being subdivided by said second transport means into a superatmospheric pressure zone and subatmospheric pressure zone, said zones being in communication with one another through said second transport means, each of said transport means being a respective drum composed of porous material, the drum of said developing chamber being supplied with said agent and the drum of said degassing chamber being supplied with a degassing medium.

4,236,806

DENTAL FILM PACKET AND PROCESSOR THEREFOR

Howard W. Hoadley, 9143 Petit Ave., Sepulveda, Calif. 91343

Filed Jan. 21, 1976, Ser. No. 650,954

Int. Cl.³ G03D *9/02;* **G03B** *41/16;* **G03C** *5/16, 1/48*

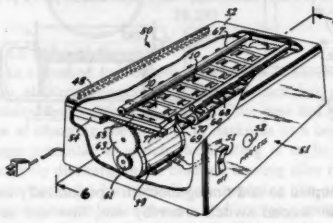
U.S. Cl. 354—303 **9 Claims**

1. A processor for developing a film chip having emulsion coatings on both surfaces thereof and enclosed in a packet together with a pair of pods containing a viscous developer solution on one end of the film chip and a pair of pods containing a viscous fixer solution on the other end thereof, said processor comprising:

a first releasing means and a spaced apart second releasing means;

transport means for said packet disposed between said first and second releasing means, said packet held on the transport means with the pair of pods on the respective ends thereof adjacent said first and second releasing means; and

control means operable to move said transport means and thereby said packet in one direction past said first releasing means to release the developer solution contained in the pair of pods on one end of said packet and to cause said developer solution to be evenly spread in a thin layer over the emulsion coatings on said film chip and then to move said packet in the opposite direction past said second releasing means to release the fixer solution contained in the pair of pods on the other end of said packet and to cause said fixer solution to be evenly spread in a thin layer over the emulsion coatings on said film chip.

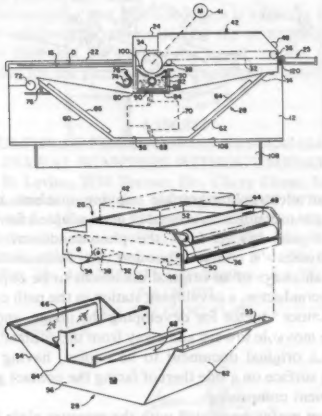


4,236,807

MODULAR ELECTROPHOTOGRAPHIC COPYING MACHINE

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Feb. 12, 1979, Ser. No. 11,307
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **5 Claims**



1. An electrophotographic copying machine for producing a copy of a document comprising:

(a) a modular enclosing external cabinet assembly;

(b) a self-contained mechanical assembly module enclosed within said external cabinet assembly for receiving an image of a document, converting said image into a latent electrostatic image, and then ejecting therefrom on a sheet of paper a toned image of said latent electrostatic image, said mechanical assembly further including a supporting frame, a plurality of electrophotographic belt supporting rollers mounted on the frame, an electrophotographic belt mounted on said plurality of rollers to define a pair of generally parallel reaches, a drive motor operably connected to one of said rollers, a charging device mounted on said supporting frame disposed adjacent the belt in the vicinity of the lower reach thereof, and

(c) a self-contained optical assembly module removably mounted in said external cabinet assembly for projecting an image to the mechanical assembly module, and said optical module comprising an open-top housing of frusto conical configuration and seating an optical projection system therein, said housing including opposite wall means including notch means opening upwardly thereof, and

(d) a self-contained toner assembly module removably mounted relative to said optical assembly module for toning the latent assembly electrostatic image formed within the mechanical assembly module, the said toner assembly being removably seated within said notch means nested within said housing in noninterferent relationship with said optical projection system, said toner supply module comprising a container support seated in said notch means, a container having a slotted top wall, accommodated within the container support, a supply of liquid toner in the container and a feed roller within the container for leading liquid toner through said slotted top, said slotted top of said container being located in proximity to the lower reach of said electrophotographic belt when the container is seated in said container support, and

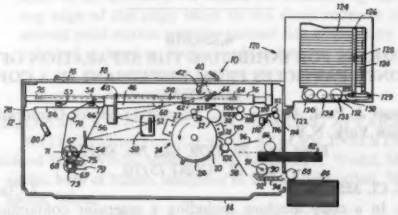
(e) an image transfer device, including a transfer roller mounted on said supporting frame for transferring the toned image to a carrier sheet for delivery thereof to the exterior of said cabinet assembly.

4,236,808

COPIER SCAN AND COLLATOR BACK BAR CONTROL

Robert J. Tusso, Old Saybrook; Peter Feher, East Hartford, both of Conn.; Max Schultes, Old Tappan, N.J., and Dietmar Eberlein, New City, N.Y., assignors to Savin Corporation, Valhalla, N.Y.

Filed Jan. 11, 1979, Ser. No. 2,670
Int. Cl.³ G03G *15/28*
U.S. Cl. 355—8 **11 Claims**



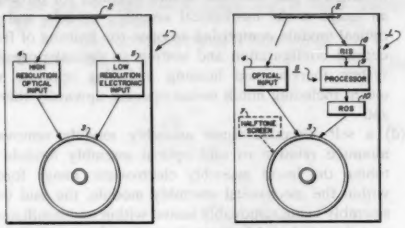
10. Apparatus including in combination, a copier adapted to make copies of different lengths, a collator having bins for receiving copies from said copier, said collator including a back bar, means mounting said back bar for movement to adjust the size of said bins, means responsive to movement of a sheet of copy material through the machine for measuring the length of a copy made by said machine and means responsive to said measuring means for moving said back bar to adjust said bins to the size of said copy.

4,236,809

LOW RESOLUTION CORRECTION APPARATUS AND METHOD FOR ELECTROPHOTOGRAPHIC COPIERS

Dorian Kermisch, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 4, 1979, Ser. No. 71,829
Int. Cl.[3] G03G *15/01*
U.S. Cl. 355—4 17 Claims



1. Electrophotographic reprographic apparatus comprising

a photoconductive member mounted for cyclic movement relative to corona generating means for charging the surface of the member and exposure means for exposing the charged surface of electromagnetic radiation for creation of latent electrostatic images,

a platen for supporting an original to be reproduced,

optical exposure means for exposing the charged member to an optical image of an original at the platen including lamp means for illuminating an original at the platen and lens means for projecting an image of an illuminated original to the charged member to create an optical latent electrostatic image and

raster exposure means for exposing the charged member to a raster image of the same original at the platen including raster input scanning means for generating electrical raster image signals representative of an image of the original, processor means coupled to the raster input scanning means for generating correction signals corresponding to the raster image signals and raster output scanning means for moving a spot of illumination in a raster pattern over the charged surface and for modulating the intensity of the spot in response to the correction signals to create a raster latent electrostatic image,

said optical and raster latent images being created during the same cycle of the photoconductor member and being in registration with each other.

4,236,810

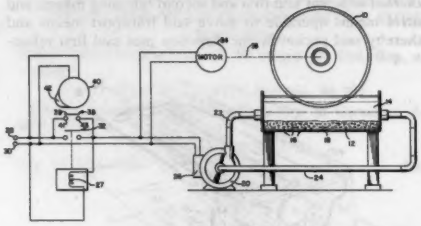
MEANS FOR INHIBITING THE SEPARATION OF TONER PARTICLES FROM DISPERSANT IN A COPY MACHINE

Samuel J. Paul, Ardsley, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,265
Int. Cl.[3] G03G *15/10*
U.S. Cl. 355—10 7 Claims

1. In a copy machine including a reservoir containing a liquid developer consisting of toner particles in a dispersant, a source of voltage, a power-on switch coupled to said voltage source, a timer relay adapted to maintain said power-on switch closed for a predetermined period of time after actuation of said switch, a copier drum, first motor means coupled to said switch for rotating said copier drum in response to each actuation of said switch, a pump and interconnecting tubes coupled to said reservoir, second motor means coupled between said switch and said pump for activating said pump to circulate said liquid developer through said interconnecting tubes and said reservoir for said predetermined period of time, an improvement for inhibiting the separation of toner particles from said dispersant during periods of non-use comprising:

second switch means coupled to said power-on switch, timing motor means coupled to said source of voltage, and



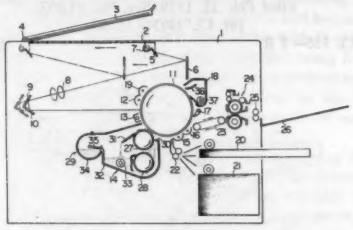
means coupled to said timing motor for periodically actuating said second switch whereby said first and second motor means will be actuated to rotate said copier drum and to activate said pump thereby circulating said liquid developer.

4,236,811

ELECTROPHOTOGRAPHIC COPYING APPARATUS

Akira Hirose, Tokyo; Keiji Sugita, Yokohama, and Yasuzi Takagi, Matsudo, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Dec. 28, 1978, Ser. No. 973,802
Claims priority, application Japan, Jan. 7, 1978, 53-618
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 R 2 Claims



1. In an electrophotographic copying machine having a movable photoconductor, a contact glass adapted for supporting an original spaced from the photoconductor, imaging means between the contact glass and the photoconductor for focusing an image of an original document to be copied onto the photoconductor, a developing station in the path of motion of the photoconductor for developing the image, and a pressure plate movable toward and away from the contact glass for holding an original document to be copied, having a light-reflecting surface on a side thereof facing the contact glass, the improvement comprising:

detection means associated with the pressure plate for sensing the position of the pressure plate with respect to the contact glass;

quenching means facing the photoconductor at a position upstream of the developing station in the direction of movement of the photoconductor; and

control means connected between said detection means and said quenching means for activating said quenching means when the pressure plate is in a position away from the contact glass.

4,236,812

IMAGE RECORDING METHOD FOR ELECTROPHOTOGRAPHIC FILM

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Continuation of Ser. No. 688,623, May 21, 1976, abandoned, which is a continuation of Ser. No. 389,149, Aug. 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 260,782, Jun. 8, 1972, abandoned. This application Mar. 7, 1979, Ser. No. 18,295

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—14 E 11 Claims

1. In a method for recording an image of a scene or the like on an electrophotographic member which has a coating of photoconductive material and an ohmic base and including the steps of charging the coating in darkness to a certain surface charge potential at which the coating is to be discharged, selectively discharging the charged coating after reaching said certain potential by immediately exposing the same to light from a scene projected thereon and applying toner after exposure is completed to the selectively discharged coating to form a visible image of the scene, the invention comprising the steps of:

A. measuring the intensity of the light produced by the scene which is to be projected onto the coating,

B. measuring the instantaneous surface charge potential of said coating during the charging simultaneously with the measurement of the light intensity,

C. comparing, simultaneously, both the measured light intensity and the changing instantaneous surface charge potential of the coating to provide a varying comparison signal,

D. providing reference values of charge potential representative of charge potential values predetermined to be substantially optimum for good quality imaging over a series of light intensity values,

E. optionally fixing either one or the other of the functions of charge potential and the time of exposure, and varying that function which is not fixed, the variation being responsive to the relationship as represented by the said comparison signal and

F. discontinuing that function which is varied in response to the relationship represented by the comparison signal at the time that the comparison signal reaches a reference value for the particular measured light intensity.

4,236,813

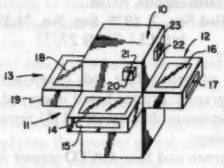
MULTIPLEX PHOTOCOPIER SYSTEM HAVING PLURAL SCANNERS WITHOUT MEMORY

Alfred B. Levine, 2924 Terrace Dr., Chevy Chase, Md. 20015

Continuation-in-part of Ser. No. 36,099, May 4, 1979, which is a division of Ser. No. 925,290, Jul. 17, 1978, which is a continuation-in-part of Ser. No. 775,480, Mar. 8, 1977, abandoned, which is a continuation of Ser. No. 718,260, Aug. 27, 1976, Pat. No. 4,182,568. This application May 15, 1979, Ser. No. 39,107

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—14 R 7 Claims



7. A multiplexing electrostatic photocopier comprising:

a plurality of independently operable scanning stations, each adapted to randomly receive optically reproduceable images to be copied,

a common high speed electrostatic developing mechanism responsive to said plurality of scanning stations for producing copies of said images,

and control means for multiplexing said common electrostatic developing mechanism with said plurality of stations to selectively respond to different ones of said stations in time sequence in a predetermined order.

4,236,814

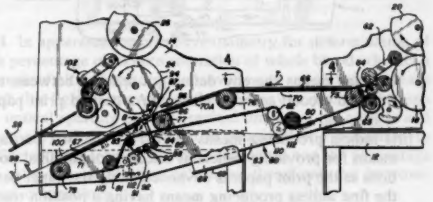
TRANSPORT SYSTEM FOR ADVANCING COPY SHEETS THROUGH TANDEM DUPLICATING SYSTEM

Kenneth J. Tonkin, Glenview, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed Jun. 13, 1979, Ser. No. 48,082

Int. Cl.[3] G03B *27/32, 27/52*

U.S. Cl. 355—26 14 Claims



1. In a duplicating system having a first print station for applying an image to a first side of a copy sheet and a second print station for applying an image to a second side of the same copy sheet, the copy sheet having a leading edge and a trailing edge, and an improved paper transport means for transporting the copy sheet from the first print station to the second print station, the first print station including a sheet-ejector for introducing the copy sheet to the transport means and the second print station including a sheet receiver for receiving the copy sheet from the transport means, the improvement comprising:

(a) a sheet conveyor mounted between the first print station and the second print station for receiving a copy sheet ejected by the ejector means and engaging only the second side thereof, the sheet conveyor having a surface movable in one direction for transporting the copy sheet from the first print station to the second print station; and

(b) a sheet transfer means responsive to arrival of the copy sheet at the second print station for transferring the trailing edge of the copy sheet to the sheet receiver of the second print station with the second side of the copy sheet oriented to have an image applied thereto.

4,236,815

ADJUSTABLE WIDTH PUNCH MARKING APPARATUS WITH INTERCHANGEABLE SPACER INSERTS

Richard D. Anderson, Maple Grove, and John A. Wedel, Minneapolis, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Aug. 6, 1979, Ser. No. 63,675

Int. Cl.[3] G03B *29/00, 27/52*

U.S. Cl. 355—29 13 Claims

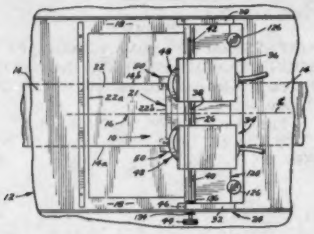
1. In a photographic printer in which a photographic print paper strip is transported along a paper path and is exposed to light from a photographic film original at a print mask location, adjustable indicia producing apparatus for providing indicia at selected locations of the print paper and being adjustable to accommodate print paper strips of different widths, the adjustable indicia producing apparatus comprising:

guide means positioned proximate the print mask location and defining a guide path transverse to the paper path;

first and second carriage means movable along the guide path on opposite sides, respectively, of a center line of the paper path;

carriage positioning means for moving the first and second carriage means along the guide path essentially symmetrically about a center line of the paper path;

insert means for insertion between the first and second carriage means and for engagement with the first and second



carriage means thereby defining a spacing between the first and second carriage means for a desired print paper width; and

first indicia producing means carried by the first carriage means for providing indicia at selected longitudinal positions as the print paper is advanced along the paper path, the first indicia producing means having a position transverse to the paper path which is established by engagement of the first carriage means with the insert means.

4,236,816

ELECTRONIC AUTOMATIC TIMING DEVICE FOR PHOTOGRAPHIC ENLARGEMENTS OR REPRODUCTIONS BY PROJECTION OR CONTACT

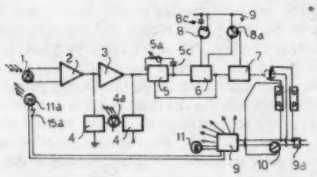
Eugenio Costa, C.so Re Umberto, 17, Torino 10121, Italy

Filed Oct. 4, 1977, Ser. No. 839,250

Claims priority, application Italy, Oct. 4, 1976, 69378 A/76

Int. Cl.³ G03B 27/78

U.S. Cl. 355—68 **6 Claims**



1. A device for controlling the exposure of photographic prints to be used in connection with a separate enlarger or contact printer and a darkroom safelight, comprising

a photometric element for receiving reflected light from a chosen area of the illuminated surface of the image to be printed,

a light source for projecting light over said area,

level sensing means,

means responsive to the output of said photometric element, while the latter receives reflected light from said illuminated surface, for providing buffering and amplification to said photometric element's output signal and for commanding through said level sensing means an alert display to light up as soon as said photometric element's output signal is too high or too low for said responsive means to work linearly with said photometric element, and

means for activating the enlarger or contact printer and safelight for a time dependent on the amount of the reflected light received by said photometric element during exposure.

4,236,817

PHOTOGRAPHIC COPYING MACHINE WITH EXCHANGEABLE FORMAT MASKS

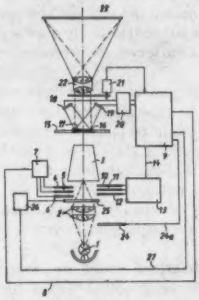
Franz Hofstetter, Hebertshausen, Fed. Rep. of Germany, assignor to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jul. 27, 1979, Ser. No. 61,308

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833423

Int. Cl.³ G03B 27/72

U.S. Cl. 355—68 **9 Claims**



1. An improved photographic copying machine of the type provided with means for positioning an original to be copied including format mask means for establishing a variable-area format-mask frame for originals to be copied, exposure means for exposing the original to be copied to copying light, variable projection means for projecting a copying-light image of the original into a predetermined plane where copying medium is to be situated, and exposure-duration control means operative for automatically implementing the exposure duration of the original and copying medium, the improvement comprising frame-area measuring means operative for ascertaining the size of the variable format-mask frame and modifying the operation of the exposure-duration control means in dependence thereon by photometrically evaluating light transmitted through the format-mask frame in the absence of an original to be copied.

4,236,818

EXPOSURE TIME CONTROL FOR PHOTOGRAPHIC PRINTER

Jess F. Fauchier, II, Minneapolis, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Sep. 7, 1979, Ser. No. 74,399

Int. Cl.³ G03B 27/73

U.S. Cl. 355—77 **18 Claims**

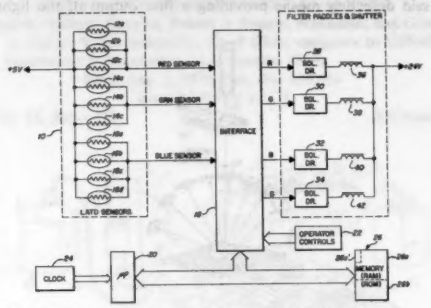
1. A method of controlling red, green and blue exposure time in a photographic printer based upon red, green and blue large area transmission density (LATD) sensor readings, the method comprising:

making red, green and blue LATD sensor readings prior to initiation of an exposure cycle;

calculating red, green, and blue initial exposure times based upon the LATD sensor readings;

initiating an exposure cycle;

making LATD sensor readings during the exposure cycle; and



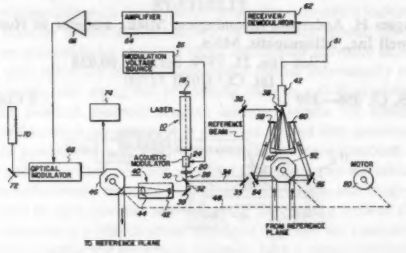
modifying red, green and blue exposure times during the exposure cycle as a function of the LATD sensor readings made during the exposure cycle.

4,236,819

IMAGERY WITH CONSTANT RANGE LINES

Leland D. Green, Sierra Madre, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 29, 1974, Ser. No. 494,009
Int. Cl.[3] G01C *3/08;* **H04N** *7/00*
U.S. Cl. 356—5 **1 Claim**



1. Apparatus for producing a range contour map of an area consisting of spaced constant range lines with equal range differences between adjacent lines, comprising:

a mode-locked laser producing a beam of pulsed light of highly stable pulse repetition frequency,

means for splitting said beam into first and second beams,

means for scanning said area with said first beam,

a photodetector for converting an optical signal at its input into an electrical signal at its output,

means for applying light reflected from said area as a result of said scanning to the input of said photodetector,

means for applying said second beam to the input of said photodetector,

a radio receiver tuned to a harmonic of said pulse repetition frequency and containing demodulating means for producing at its output a signal representing the amplitude modulation of a radio frequency signal at its input,

means for applying the output signal of said photodetector to the input of said receiver, and

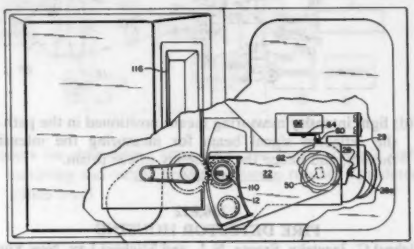
means synchronized with said scanning means for making a visual recording of the output of said receiver, said recording constituting said contour map.

4,236,820

CUVETTE AND STANDARD HOLDER FOR OXIMETERS

Terence Walker, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 12, 1979, Ser. No. 11,460
Int. Cl.[3] G01N *21/55, 21/13, 33/72*
U.S. Cl. 356—41 **5 Claims**



1. In apparatus for reflective oximetry for determination of the percentage of oxygen saturation of whole blood wherein a sample of blood is placed in a cuvette and supported on means such that light of known wavelengths may be directed through an optical aperture onto the optical surface of the cuvette and the light reflected therefrom is measured and compared to reflected light from a reflectance standard and the percentage of oxygen concentration calculated therefrom, the improvement comprising:

apparatus for supporting said cuvette and said reflectance standard for light reflection measurements including;

arm means journaled for rotary motion in a substantially horizontal plane on said oximetry apparatus to at least two positions contiguous said optical aperture;

platform means having a cuvette station and a reflectance standard station disposed in said arm means displaced from said journal and relatively adjacent said optical aperture, said platform being loosely retained in said arm so as to bear directly on said oximetry apparatus adjacent said optical aperture;

means for orienting said platform means in said arm with respect to the vertical center of said optical aperture;

leg means disposed on the underside of said platform means, said leg means adapted to determine a reference plane in said platform parallel to the plane of said optical aperture when said legs bear on said oximetry apparatus;

a bearing surface surrounding said cuvette station, said bearing surface disposed in a plane at a predetermined distance from and parallel to said reference plane;

cuvette retaining means disposed in said platform adjacent said cuvette mounting station for seating said cuvette on said bearing surface at said mounting station; and

a light reflection standard disposed in said platform means adjacent said cuvette station and substantially equidistant said journal as said cuvette station.

4,236,821

METHOD AND APPARATUS FOR TESTING OPTICAL RETRODIRECTIVE PRISMS

Jurgen R. Meyer-Arendt, Forest Grove, Oreg., assignor to McHenry Systems, Inc., Donald, Oreg.

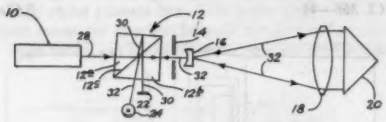
Filed Aug. 10, 1979, Ser. No. 65,531
Int. Cl.[3] G01B *9/00;* **G01N** *21/01*
U.S. Cl. 356—124 **18 Claims**

1. Apparatus for testing optical retrodirective prisms for light reflection efficiency, comprising:

(a) light generating means for generating a beam of light,

(b) optical beam splitter means in the path of the beam to generate a signal beam and a reference beam, positioned at a predetermined angle other than 45° with reference to the axis of said beam of light,

(c) aligned pinhole means, lens means and a retrodirective prism positioned in the path of the separated signal beam for reflection by the prism of the signal beam back substantially parallel to its initial path, through the lens means, pinhole means and beam splitter, and



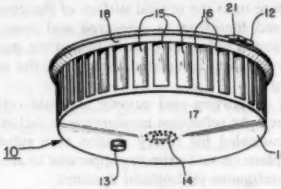
(d) light intensity measuring means positioned in the path of the reflected signal beam for measuring the intensity thereof, and hence the efficiency of the prism.

4,236,822

FIRE DETECTOR HOUSING

Michael G. Jaretsky, Sparta, N.J., and Michael Lax, New York, N.Y., assignors to Baker Industries, Inc., Parsippany, N.J.

Filed Jan. 22, 1979, Ser. No. 5,110
Int. Cl.³ G08B *17/10*
U.S. Cl. 356—256 **7 Claims**



1. A fire detector housing having a peripheral area including a plurality of vanes spaced around the peripheral area to admit gases and smoke particles into the housing, each vane being aligned at an acute angle relative to a tangent at the peripheral area, such that the vanes both provide an effective entrance area for the gases and smoke particles and prevent passage of such combustion products directly through the housng in a straight line, in which the vanes are disposed in a circular pattern, and the vanes collectively define a window area, the acute angle of the vanes ensuring that gases are readily admitted over substantially more than half the window area.

4,236,823

DIFFRACTOMETER FOR MEASURING SIGNAL DEPTH AND WIDTH

William R. Roach, Rocky Hill, and Ping Sheng, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 28, 1979, Ser. No. 16,110
Claims priority, application United Kingdom, Sep. 18, 1978, 37195/78
Int. Cl.³ G01B *9/02, 11/22*
U.S. Cl. 356—351 **10 Claims**

1. Depth estimating apparatus for use with a structure having successively spaced apart depressions of a given cross-sectional shape, said apparatus comprising:

means for illuminating said depressions on said surface with a coherent beam of light, the structure of the depressions in the region illuminated by said light beam serving as a diffraction grating for diffracting light from said illuminated region in a diffraction pattern having a zero order and higher orders;

means for detecting the light power diffracted from the illuminated region in the higher diffraction orders; and

means, interposed between said illuminating means and said detecting means, for polarizing the light detected in a first direction and in a second direction orthogonal to said first direction;

said detecting means providing a first output of the light

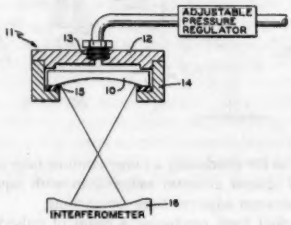
power for said first polarization and a second output of the light power for said second polarization, the ratio of said light power outputs being indicative of the depression depth.

4,236,824

METHOD FOR CORRECTION OF FORGED OPTICAL ELEMENTS

Rogers H. Anderson, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 21, 1979, Ser. No. 50,838
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—359 **8 Claims**



1. Apparatus for correction of forged halide optical elements comprising:

an enclosed chamber for supporting a forged halide optical element within the chamber, the chamber having resilient gas tight sealing and support means for the optical element, the chamber having an opening therein for direct viewing of the optical element supported therein;

means including controllable gas pressure regulator means for connecting a source of pressurized gas to said enclosed chamber so that a controllable gas pressure can be applied in said chamber, said gas pressure being thereby applied to the inner face of the supported optical element to cause deformation thereof to achieve a desired correction of said element; and,

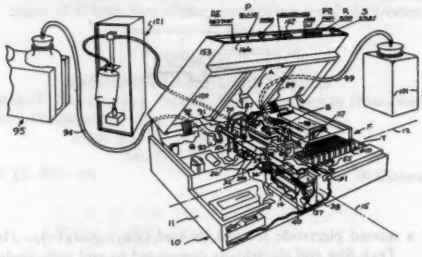
interferometer means positioned to view said optical element through said chamber opening to determine when the desired correction is achieved.

4,236,825

AUTOMATIC MONOCHROMATIC LIGHT ABSORBANCE MEASUREMENT ANALYZER

Saul R. Gilford, Oberlin; Robert J. Emary, Wakeman, and Glen A. Carey, North Ridgeville, all of Ohio, assignors to Gilford Instrument Laboratories, Inc., Oberlin, Ohio

Filed Aug. 1, 1978, Ser. No. 929,987
Int. Cl.[3] G01N *21/25*
U.S. Cl. 356—414 8 Claims



1. An apparatus for monochromatically measuring a fluid sample in a cuvette comprising: vessel means each containing at least one cuvette into which is disposed a fluid sample to be analyzed: transfer means for carrying said vessel means to a processing path: conveying means including a drive belt mechanism disposed along said path; first block means connectable with said belt mechanism being movable therewith and operable to move the transfer means in a direction perpendicular to said processing path and to locate said transfer means at one end of said path: means connectable with said first block means and engageable with said transfer means for releasably locking said transfer means at said one end of said path: second block means actuatable by said first block means and movable along said path effective to move the vessel means individually off said means and along the processing path to a first predetermined position thereon: reagent additive means for adding reagent to each cuvette as it is disposed at said first predetermined position on said trackway: analyzing means disposed at said predetermined position alongside the trackway for taking a monochromatic measurement of the fluid sample and reagent solution in each cuvette; and means for positioning each of the cuvettes one at a time in timed sequence opposite the analyzing means to enable the analyzing means to take a monochromatic measurement of the solution in each cuvette.

4,236,826

APPARATUS FOR OPTICALLY MEASURING A PROPERTY OF AN OBJECT

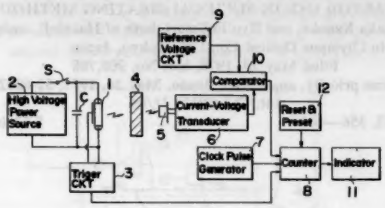
Akio Yamanishi, Tondabayashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 1, 1979, Ser. No. 16,561
Claims priority, application Japan, Mar. 7, 1978, 53/26202
Int. Cl.[3] G01N *21/01*
U.S. Cl. 356—432 18 Claims

1. An apparatus for optically measuring a property of an object comprising:

means for producing a flash of light, the intensity of which decays as a function of time, said function including at least a region wherein the light intensity decays in an exponential function of time;

means for receiving light of the light producing means via the object and for producing an output which changes in response to the change in intensity of the received light;



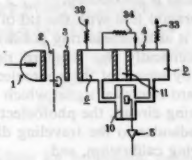
means for detecting a time when the output of said light receiving and output producing means reaches a predetermined level.

4,236,827

OPTO-ACOUSTIC GAS ANALYZER

Atushi Horiba; Osamu Saitoh, and Kozo Ishida, all of Miyanohigashi, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Dec. 4, 1978, Ser. No. 966,052
Int. Cl.[3] G01N *21/34*
U.S. Cl. 356—437 1 Claim



1. An opto-acoustic gas analyzer comprising a black body light source, a chopper means in the path of the light emitted from said light source for intermittently intercepting the light from said light source, a separate positive interference filter in the path of the light from said chopper and having a plurality of film layers for filtering from the light wavelengths of light other than the wavelengths of light absorbed by the gas for which analysis is being conducted, and an opto-acoustic detector for receiving the filtered light from said positive interference filter and having two compartments therein which are aligned in the direction of the passage therethrough of light from said light source, a filter means between said two compartments for filtering from the light passing therethrough at least some of the light having wavelengths in the range of wavelengths absorbed by the gas for which the analysis is being conducted, means for passing the gas to be analyzed into one of said compartments and from said one compartment to the other compartment and out of the other compartment, and a separate chamber connected to said two compartments and said detector further having pressure change detecting means in said separate chamber and producing an electric signal corresponding to such changes.

4,236,828

METHOD FOR CALIBRATING DENSITOMETER OF CATAPHORETIC APPARATUS AND CALIBRATION FILM FOR USE IN SUCH CALIBRATING METHOD

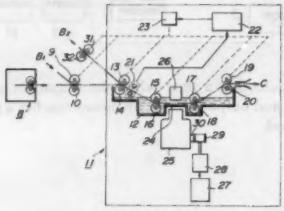
Nobutaka Kaneko, and Ryo Fujimori, both of Hachioji, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 23, 1978, Ser. No. 908,788

Claims priority, application Japan, May 26, 1977, 52-60527

Int. Cl.[3] G01N *21/06*

U.S. Cl. 356—444 **5 Claims**



1. A method for calibrating a densitometer of an automatic cataphoresis apparatus including a vessel for containing a clarifying liquid for clarifying a sample bearing film, a photoelectric device for detecting a cataphoretic fractionate image on the sample bearing film situated at a measuring position in the clarifying liquid to produce an electrical signal relating to a density of the cataphoretic fractionate image, a measuring circuit for receiving said electrical signal; means for feeding the sample bearing film to said measuring position and means for discharging the sample bearing film from the measuring position, said method comprising:

introducing a calibration film having standard patterns of known density sandwiched between upper and lower flexible and transparent sheets and an identifying mark into the densitometer by means of said feeding means, but through a path different from the path through which the sample bearing film is introduced,

detecting the calibration film with the aid of the identification mark to set it at the measuring position,

detecting photoelectrically the standard patterns on the calibration film by means of the photoelectric device to produce a standard electrical signal which is used to calibrate the measuring circuit, the photoelectric device in a direction perpendicular to the traveling direction of the film during moving calibration, and

discharging the calibration film from the densitometer by means of said discharging means through the same path as that of the sample bearing film.

4,236,829

SOLID-STATE IMAGE SENSOR

Takao Chikamura, Osaka; Shinji Fujiwara, Minooshi; Yasuaki Terui, Neyagawa, and Masakazu Fukai, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 24, 1979, Ser. No. 6,129

Claims priority, application Japan, Jan. 31, 1978, 53-10110; Feb. 1, 1978, 53-10987; Jun. 19, 1978, 53-74446

Int. Cl.[3] H01L *29/161, 27/14, 29/78*

U.S. Cl. 357—16 **11 Claims**

1. A solid-state image sensor, comprising:

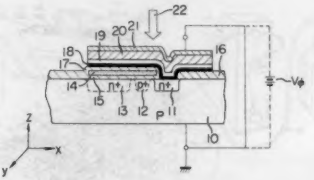
a semiconductor substrate having a region of a first conductivity type and one or more regions of a second opposite conductivity type, said regions extending to a major surface of said substrate;

an insulating layer formed over said major surface of said semiconductor substrate leaving exposed one portion of said region of said second conductivity type;

a first electrode disposed on said insulating layer and extending to overlie and make electrical contact with said region of said second conductivity type;

an n-type semiconductor layer overlying said insulating layer and overlying and in electrical contact with said first electrode;

a film disposed on said n-type semiconductor layer so as to form a heterojunction therewith and comprising $(Zn_{1-x}Cd_xTe)_{1-y}(In_2Te_3)_y$, where $0<x<1$ and $0<y<0.3$;



a second electrode formed on said $(Zn_{1-x}Cd_xTe)_{1-y}(In_2Te_3)_y$ film and electrically connected to said semiconductor substrate;

a charge transfer or switching element formed in one portion of said semiconductor substrate separate from and adjacent to said region of said second conductivity type, and

a gate electrode for entering the charge stored in said region of said second conductivity type into said charge transfer or switching element.

4,236,830

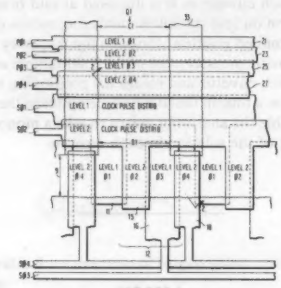
CCD PARALLEL-SERIAL AND SERIAL-PARALLEL CHARGE TRANSFER METHOD AND APPARATUS

Eugene S. Schlig, Somers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,590

Int. Cl.[3] H01L *29/78*; G11C *19/28*

U.S. Cl. 357—24 **15 Claims**



1. A charge coupled device, comprising:

a semiconductor substrate;

a plurality of parallel electrodes positioned over said substrate and arranged in insulated overlapping relation and responsive to parallel transfer voltage signals for moving a plurality of charge packets along parallel charge transfer channels thereof in said substrate;

a plurality of serial electrodes positioned over said substrate and arranged in insulated overlapping relation and responsive to serial transfer voltage signals for moving a plurality of charge packets in a serial direction along a serial charge transfer path in said substrate;

interface electrode means disposed between said plurality of serial electrodes and a last parallel electrode of said plurality of parallel electrodes and responsive to at least one of

said serial transfer voltage signals for passing charge packets from the parallel charge transfer channels of the last parallel electrode to the serial charge transfer path of the plurality of serial electrodes over corresponding interface channels in said substrate; and

isolation means for defining a parallel channel width for each of said parallel charge transfer channels and for defining an interface channel width for each of the interface channels, the interface channel width being substantially as great as the distance between the outer lateral edges of at least two of the overlapping serial electrodes.

4,236,831

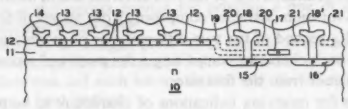
SEMICONDUCTOR APPARATUS

Thomas E. Hendrickson, Wazata, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 27, 1979, Ser. No. 61,215

Int. Cl.³ H01L *27/14*

U.S. Cl. 357—30 **14 Claims**



1. A semiconductor device having therein a plurality of photodiodes connected in series, said device comprising:

a semiconductor material body having a major surface;

an insulating means disposed on said semiconductor material body major surface comprising at least a first layer of insulating material having a surface portion;

a first polycrystalline semiconductor material layer disposed on said first insulating material layer surface portion, said polycrystalline semiconductor material layer comprising a plurality of regions of a first conductivity type and a plurality of regions of a second conductivity type with members of said first and second pluralities of polycrystalline semiconductor material layer regions alternating in position with one another such that a member from either of said first and second pluralities of polycrystalline semiconductor material layer regions is immediately adjacent to at most a pair of members from the opposite plurality, except for two end members each of which are immediately adjacent to only one member from an opposite plurality, there being a semiconductor pn junction between those said polycrystalline semiconductor material layer regions which are immediately adjacent as aforesaid; and

electrical shorting means between each said polycrystalline semiconductor material layer region and at most one of any said polycrystalline semiconductor material layer regions which are immediately adjacent as aforesaid.

4,236,832

STRAIN INSENSITIVE INTEGRATED CIRCUIT RESISTOR PAIR

Shigeru Komatsu, Yokohama; Satoshi Takahashi, Tokyo; Kouji Suzuki, and Masao Wakatsuki, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 29, 1978, Ser. No. 920,358

Claims priority, application Japan, Jun. 29, 1977, 52-76465; Jul. 14, 1977, 52-83591; Jul. 14, 1977, 52-83593; Jul. 14, 1977, 52-83595

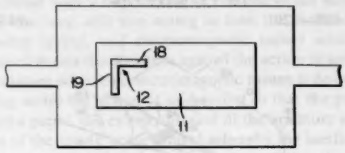
Int. Cl.³ H01L *27/04*

U.S. Cl. 357—51 **10 Claims**

1. A semiconductor integrated circuit device comprising:

a silicon semiconductor substrate of N-conductivity type having a least one main surface of a substantial (100), (511), (811), or (911) crystal face;

a P-conductivity type resistor unit formed in said main surface, said resistor unit including (1) a first P-conductivity type resistor extending in a first direction in said main surface and having a first end and a second end, and (2) a second P-conductivity type resistor extending in a second direction in said main surface perpendicular to said first direction and having a first end solely connected to said second end of said first P-conductivity type resistor and a



second end, said first and second P-conductivity type resistors having the same resistance; and

a functional element formed in said main surface apart from said resistor unit and connected to said second end of said second P-conductivity type resistor.

4,236,833

SCREW MACHINE FOR PROCESSING MATERIALS OF SOLID, PASTY AND LIQUID CONSISTENCY

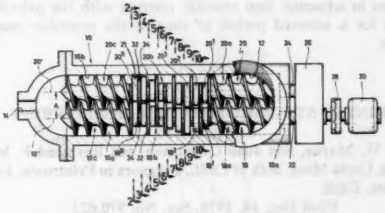
Josef A. Blach, Wilhelmstr. 24, D 7144 Asperg, Fed. Rep. of Germany

Filed Jan. 18, 1979, Ser. No. 4,491

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1978, 2802125; Jun. 24, 1978, 2827877

Int. Cl.³ B29B *1/10*

U.S. Cl. 366—85 **6 Claims**



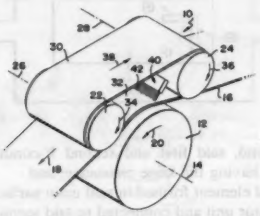
1. Screw machine for processing materials of solid, liquid and pasty consistency, comprising a housing and at least two screw shafts mounted for rotation in a cavity of said housing, means for rotating the screw shafts, the cross-section of said cavity having at least in a selected longitudinal area of the two screw shafts the shape of two overlapping circles concentric to the screw shaft axes, the improvement comprising at least one first circular ring mounted on a first of said screw shafts and a first circular ring mounted on the second of said screw shafts, each of said first circular rings being concentric to the axis of the screw shaft carrying the first circular ring and having a radius that is only slightly smaller than the radius of the cross-sectional circle of the housing cavity pertaining to the respective screw shaft, the first circular ring of the second screw being offset in axial direction relative to the first circular ring of the first screw shaft, at least one second circular ring mounted on the second screw shaft opposite the first circular ring of the first screw shaft, and at least one second circular ring mounted on the first screw shaft opposite the first circular ring of the second screw shaft, each of said second circular rings being concentric to the axis of the screw shaft carrying the second circular ring and having an outer diameter equal to the difference between twice the distance between the screw shaft axes and the outer diameter of the first circular ring disposed opposite to the respective second circular ring.

4,236,834

ELECTROTHERMAL PRINTING APPARATUS

Cameron H. Hafer, and Clayton V. Wilbur, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,710
Int. Cl.³ B41J *3/04*
U.S. Cl. 400—120 **14 Claims**



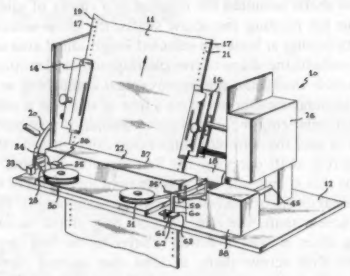
1. A thermal printing arrangement comprising the combination of a thin, electrically resistive element, thermally sensitive printable media disposed in adjacent, heat transfer relation with the resistive element, circuit means for applying a potential difference across discrete areas of the thickness of the resistive element, the resistive element heating at the discrete areas in response to the potential difference and the thermally sensitive printable media undergoing changes in the coloration thereof at discrete areas adjacent the discrete areas of the resistive element in response to said heating, means for moving the printable media and means for moving the resistive element together with the printable media while printing so that a portion of the resistive element having heated discrete areas remains in adjacent, heat transfer relation with the printable media for a selected period of time as the printable media moves.

4,236,835

PRINTER SYSTEM WITH COMPRESSED PRINT CAPABILITY

David W. Mayne, San Juan Capistrano, and Raymond F. Melissa, Costa Mesa, both of Calif., assignors to Printronix, Inc., Irvine, Calif.

Filed Dec. 18, 1978, Ser. No. 970,622
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—121 **4 Claims**



1. A dot matrix printer capable of printing given characters in either of at least two different widths comprising the combination of:

means for feeding a printable medium incrementally through a printing line;

a reciprocable hammer bank disposed along said printing line and having a plurality of hammers spaced along the length thereof, each of the hammers including means for imprinting a dot when the hammer is impulsed toward the printing line position, said hammer bank being reciprocable along a selected length of printing line;

means coupled to reciprocate said hammer bank bidirectionally;

means for dividing the printing line into a dot matrix comprised of dot columns spaced along the width thereof and dot rows defining the height thereof, the reciprocable hammer bank sweeping through a different dot row with each reciprocation thereof;

means for determining the dot row through which the hammer bank is reciprocating;

means for generating synchronizing signals indicating the dot columns addressed by the hammers as the hammer bank reciprocates;

means for storing at least two different sets of modulation bits for each of a plurality of different possible characters to be printed, a first of the two different sets of modulation bits for each character comprising a dot matrix of first size and a second of the two different sets of modulation bits for each character comprising a dot matrix of second size different from the first size;

means for receiving indications of characters to be printed and an indication of desired character width;

means responsive to the indications of characters to be printed and the indication of desired character width for selecting one of the two different sets of modulation bits for each character to be printed from the means for storing in accordance with the indication of desired character width;

means responsive to the means for determining for selecting a row of modulation bits from the selected set of modulation bits for each character to be printed corresponding to the dot row through which the hammer bank is reciprocating;

means for selecting the bit in a selected dot column position for each selected row of modulation bits in accordance with the synchronizing signals and comprising a circuit arranged to repeatedly sequence in response to the synchronizing signals through a first or a second predetermined number of dot column positions in accordance with the indication of desired character width;

means for selecting the bits in certain of the selected dot column positions in accordance with the synchronizing signals to define selected character columns being addressed by the hammers and comprising a circuit arranged to repeatedly sequence in response to the synchronizing signals through a first or a second predetermined number of character column positions in accordance with the indication of desired character width;

means for applying said bits in certain of the selected dot column positions to impulse the hammers of the hammer bank;

the bit in a selected dot column position being selected for each of the characters to be printed in response to each synchronizing pulse; and

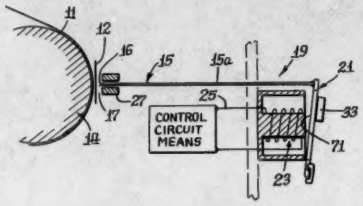
the means for selecting the bits in certain of the selected dot column positions further comprising means for sequencing through a first or a second predetermined number of values in accordance with the indication of desired character width, and means for comparing the output of said circuit arranged to repeatedly sequence with the output of the means for sequencing through a first or a second predetermined number of values and selecting the bit of a selected dot column position whenever a comparison occurs.

4,236,836

DOT IMPACT PRINTER AND ACTUATOR THEREFOR

Ingard B. Hodne, Northbrook, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Mar. 30, 1979, Ser. No. 25,378
Int. Cl.³ B41J 3/10
U.S. Cl. 400—124 2 Claims



1. In a dot matrix printer for printing a line of dots, the combination comprising:

a plurality of straight print wires aligned in a substantially horizontal line and spaced from each other in a horizontal direction and each having a print end, the other end having a bent portion

a laterally movable guide means for shifting laterally said print ends within at least one matrix,

a plurality of stationary electromagnetic actuators for said print wires arranged in upper and lower rows,

a plate armature on each of said actuators having an operative connecting portion fastened to another end of the print wire to shift its associated straight print wire to a printing position,

a flexible connecting means joining each of said bent portion of said print wires to its actuating armature and allowing shifting of its associated print end across the entire matrix by said guide means, by permitting rotational freedom for said print wires about said respective bent portions

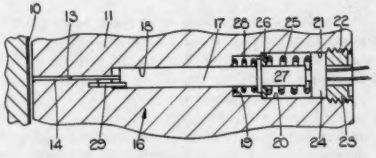
and an integral return spring portion on each of said armatures to provide a return spring force to return said print wires from said print medium, means to shift said print ends in first one direction across at least a portion of one matrix and then to return said print ends in the opposite direction while selected ones of said actuators are actuated to print dots in said horizontal line, and means carrying the paper vertically to position said print ends opposite another level in said matrices for printing second level dots in said matrices.

4,236,837

OPERATING MECHANISM FOR A DOT MATRIX PRINTER

Alec H. Seilly, North Wembley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Apr. 10, 1979, Ser. No. 28,896
Claims priority, application United Kingdom, Apr. 14, 1978, 14677/78
Int. Cl.³ B41J 3/12
U.S. Cl. 400—124 3 Claims



1. An operating mechanism for a dot matrix printer comprising a housing defining a stepped bore, an armature slidable within a first part of the bore, a pin secured to the armature for movement therewith, an abutment defined on the armature, a preloaded spring located within an enlarged second portion of the bore and surrounding the armature for acting on the armature, an abutment ring surrounding the armature and engaged by one end of the preloaded spring to urge the abutment ring into contact with a step defined at one end of the second portion of the bore, said step acting to limit the extension of the preloaded spring, and electromagnetic means which when energized moves the armature against the action of said spring, the armature when the electromagnetic means is de-energized, moving under the action of said spring so that the pin moves toward a paper, the extent of travel of the armature under the action of the spring being limited whereby the inertia only of the armature and pin causes the impact of the pin with the paper.

4,236,838

TYPE-CARRIER DISK WITH FLEXIBLE TONGUES

Giampaolo Guerrini, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 594,360, Jul. 9, 1975, abandoned. This application Apr. 15, 1977, Ser. No. 787,845
Claims priority, application Italy, Jul. 15, 1974, 69242 A/74
Int. Cl.³ B41J 1/38
U.S. Cl. 400—144.3 5 Claims

1. A type-carrier disk that is one of a series of type-carrier disks for a printing typewriter or similar machine including a selection shaft for the selection of the types of said disks, wherein each disk of said series carries a different font of type characters and includes a central part attachable to the selection shaft and a plurality of flexible radial tongues fixed to the central part at equidistant angular positions therearound, and wherein each of said tongues terminates at a free end in an enlarged base for carrying said characters and may flex independently from other tongues for the printing of the characters carried thereby, wherein the characters of said series of disks having the same meaning are carried by bases having same circumferential positions on said series of disks, and further wherein each of said bases is so configured in shape as to be different from the bases having different circumferential positions and identical to the bases having a same circumferential position to outline the envelope of the shape of a particular character of each of the different fonts, said configuration also being substantially the minimum size possible to accommodate said particular characters of each of said fonts near to the central part, whereby each disk in said series is of identical overall shape and has a minimum radius.

4,236,839

DEVICE FOR ADJUSTING THE HEIGHT OF A RIBBON GUIDE

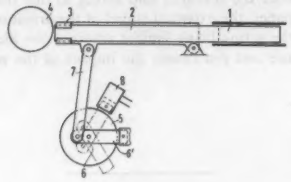
Wolfgang Mueller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,502

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1977, 2743256

Int. Cl.³ B41J *1/32*

U.S. Cl. 400—216.1 **4 Claims**



1. In a printing device having a printing station and a ribbon guide for supporting a laterally moving ribbon at said printing station, a device for selectively varying the position of said ribbon guide among a plurality of discrete positions comprising:

a stepping motor having a drive shaft;

a connector pivotally attached to said ribbon guide;

a means directly drivingly linking said connector and said drive shaft for translating rotary motion of said drive shaft to reciprocal vertical motion of said connector and guide;

a means for sensing the position of said ribbon guide; and

a logic control circuit connected to said position sensing means for operating said motor supplying pulse trains thereto of selected length for producing corresponding vertical motion to position said ribbon guide, said circuit including a means for generating said pulse train and a means for determining the rotary direction of operation of said stepping motor, said control circuit operable in a first mode enabling said pulse generating means for a pre-determined period for alternatingly moving said ribbon guide through opposite pre-determined distances, or operable in a second mode for enabling said pulse generating means for a period which ends when a selected position is sensed by said position sensing means.

4,236,840

INTERNAL RESERVOIRED SOAP DISPENSING ANIMAL WASHER

Michael D. Kennedy, 5 Beals St., Brookline, Mass. 02146

Filed Feb. 5, 1979, Ser. No. 9,310

Int. Cl.³ A46B *11/06*

U.S. Cl. 401—42 **7 Claims**

1. A dispensing brush comprising:

(a) a brush head with a forward wall, a rear wall, side walls, a top surface and a bottom surface;

(b) means for connecting to a supply of water penetrating said rear wall;

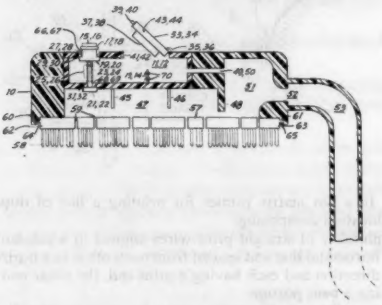
(c) a deflecting regulator wall projecting downwardly from the underside of said top surface a given distance short of said bottom surface, said deflecting regulator wall, said rear wall and said side walls defining a back pressure chamber;

(d) an intermediate surface positioned between said top surface and said bottom surface and substantially parallel thereto defining reservoir means between said top surface, said intermediate surface and said side walls and a mixing chamber between said intermediate surface, said bottom surface and said side walls;

(e) a plurality of bristles projecting downwardly from said bottom surface and a plurality of apertures extending through said bottom surface adjacent the basis of said bristles;

(f) conduit means connecting said back pressure chamber and said reservoir means and said given distance short of said bottom surface defining an opening between said back pressure chamber and said mixing chamber;

(g) valve means between said reservoir means and said mixing chamber;



(h) aperture means in said top surface for introducing dispensable material into said reservoir means; and

(i) said reservoir means further comprising first and second chambers defined by an intermediate wall located in said reservoir means and substantially parallel to said side walls.

4,236,841

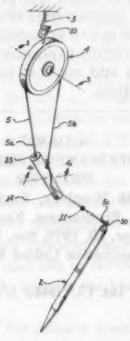
SUSPENSION SYSTEM FOR WRITING IMPLEMENTS

John H. Jongeward, 709 8th St., Yuma, Ariz. 85364

Continuation-in-part of Ser. No. 848,111, Nov. 3, 1977, abandoned. This application Apr. 5, 1979, Ser. No. 27,506

Int. Cl.³ B43K *23/02*

U.S. Cl. 401—131 **10 Claims**



1. An overhead suspension system for writing implement, said system comprising in combination:

(a) a pulley device for supporting the writing implement;

(b) a counterweight for providing a retraction force acting upon the writing implement;

(c) a cord having a first section affixed to said counterweight and extending into operative engagement with said pulley device, a second section extending from operative engagement with said pulley device into slidable engagement with said counterweight and a third section extending from slidable engagement with said counterweight to a point of attachment on the writing implement;

(d) said counterweight including:

i. a passageway having an ingress for slidably receiving said second section and an egress for slidably receiving said third section; and

ii. slot means interconnecting with said passageway for accommodating lateral extension of said third section from said passageway to restrain spinning of said counterweight about said cord sections by the interference between said third section and the walls of said slot means;

iii. means for attaching said first section to said counterweight to a point laterally displaced from the ingress to said passageway to provide a moment arm operating in conjunction with any tension of said first and second sections and urge untwisting of said first and second sections about one another;

whereby, said counterweight restrains twisting of said cord while providing a retraction force for the writing implement.

4,236,842

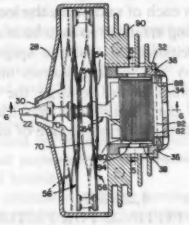
HAMMER SUPPORT FOR ROTARY PRINTING APPARATUS

George H. Dick, Highland Park, and John A. Smith, Round Lake Beach, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.

Filed Aug. 3, 1978, Ser. No. 930,809

Int. Cl.³ B41J *3/10*

U.S. Cl. 400—144.2 **6 Claims**



1. In a printing apparatus including a paper supporting means, a plurality of printing dies, movable support means for the dies operating to selectively locate dies in position adjacent the paper, a reciprocally driven, longitudinally extending hammer having a central axis, said hammer defining means for providing die impressions on the paper, and drive means for the hammer, the improvement comprising a support for said hammer, said support comprising a fixture defining an opening freely receiving the hammer for movement of the hammer within the opening without contact with the fixture, a plurality of spring arm means disposed in spaced, substantially parallel relationship with one another and extending transversely of the fixture, means securing each said arm means to the fixture, and means securing said hammer to an intermediate portion of each said arm means, said spring arm means providing a constant force normally urging said hammer toward a position of rest in said fixture, said drive means selectively providing a drive force for advancing the hammer outwardly along its axis from the rest position, in opposition to the spring force of said arm means, said arm means maintaining a fixed spatial relationship between the axis of the hammer and said fixture, the spring force of said arm means being utilized for providing return movement of the hammer to the rest position when said drive force is removed, and wherein each said arm means includes a central arm defining said intermediate portion and outer arms, said hammer being secured to a central arm of each said arm means, said central arm extending across said opening defined by the fixture, said outer arms of each said arm means being secured to the fixture at locations spaced radially outwardly from said central axis, the central arm and outer arms of each arm means extending to common, opposite outer end positions, and including means attaching the common, opposite outer ends of each arm means to each other, said outer arms comprising a pair of outer arms located on opposite sides of said central arm, and including spacers separating the common, opposite outer ends of the arm means, said common, opposite outer ends being attached to said spacers, and including a shaft supporting said hammer at one end, a spacer supported on the shaft, each central arm defining an opening which receives said shaft, said spacer being positioned between said central arms for thereby holding the central arms in a predetermined spaced relationship, and including a seat located in said fixture, said hammer engaging said seat when in said position of rest, said central arms being normally maintained in positions a greater distance from said seat than said outer arms, operation of said drive means forcing said central arms outwardly a greater distance from said seat.

4,236,843

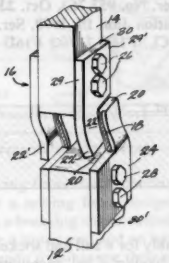
SIGN POST COUPLINGS

Douglas B. Chisholm, 1906 Memory Ct., Vienna, Va. 22180

Filed Apr. 21, 1978, Ser. No. 898,892

Int. Cl.² F16B *7/00*

U.S. Cl. 403—2 **29 Claims**



1. An upright assembly comprising

(a) a generally vertical upright member,

(b) a generally vertical base member,

(c) at least one web comprising (i) means defining at least one linear generally vertical groove therein, (ii) means defining a through-extending opening adjacent at least one end of said groove and generally transverse thereto, said opening defining a first portion of said web on one side thereof, and a second portion of said web on the other side thereof, so that the portions of the web on either side of said opening will separate under impact loading,

(d) means for attaching said first web portion to one of said members, and

(e) means for attaching said second web portion to the other of said members.

4,236,844

JOINT SUPPORT STRUCTURE

Erwin Mantele, Tuttlingen, Fed. Rep. of Germany, assignor to Gebr. Berchtold, Fed. Rep. of Germany

Filed Apr. 18, 1978, Ser. No. 897,384

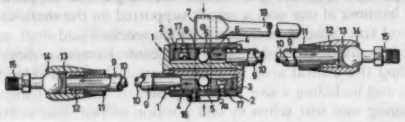
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717828

Int. Cl.³ F16C *11/06*

U.S. Cl. 403—55 **15 Claims**

1. A joint support structure comprising means forming at least one housing having therein at least one chamber, said housing embodying one wall portion which is axially movable to and from an opposite wall portion of said chamber, means one end portion of which projects in said housing to be exposed to the interior of said chamber and the opposite end portion of which projects outwardly of said housing for application thereof to selectively clamp a related joint element to a

defined seat, motion transmitting means in said chamber including at least a portion thereof which is arranged to turn about a pivot axis, in response to movement of said movable wall portion towards said opposite wall portion of said chamber, to move in a direction laterally of the direction of movement of said movable wall portion and produce a bias of said projecting means from said housing to clamp the related joint element to its defined seat.



4,236,845

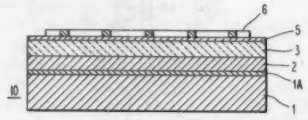
SOCKET ASSEMBLY FOR A BALL AND SOCKET COUPLING

Lawther O. Smith, Doylestown, Pa.; Timothy L. Howard, Beach Haven, N.J., and Kalman Broitman, Dresher, Pa., assignors to Gas Spring Corporation, Montgomeryville, Pa.

Continuation of Ser. No. 953,763, Oct. 23, 1978, abandoned. This application Jun. 18, 1979, Ser. No. 49,316

Int. Cl.³ F16C *11/00*; F16D *1/12*

U.S. Cl. 403—144 **6 Claims**



1. A socket assembly for a ball and socket coupling comprising a socket body having a ball-receiving socket which includes a cylindrical portion having a central axis, a pair of slots which extend through the socket body and open into the cylindrical portion of the socket at locations diametrically opposite each other and outwardly from the seated position of a ball received in the socket, each slot having a flat surface which generally faces the seated position of the ball and converges inwardly toward the axis of the cylindrical portion of the socket and thus lies obliquely to said axis, and a generally C-shaped spring clip received on the socket body, the clip having opposed end portions which extend through the slots in the socket body and part way into the socket far enough to engage a ball received therein and prevent it from being pulled out of the socket and which lie generally obliquely to the axis of the socket.

4,236,846

TUBE JOINT

Peter Barton, Birmingham, England, assignor to B. C. Barton & Son Limited, West Midlands, England

Filed Nov. 28, 1978, Ser. No. 964,411

Claims priority, application United Kingdom, Mar. 4, 1978, 08705/78

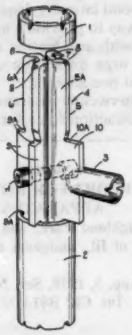
Int. Cl.³ F16B *7/00*

U.S. Cl. 403—298 **10 Claims**

1. A tube joint comprising a pair of tubes extending in different directions, and connecting means for disposition between the tubes, the connecting means comprising:

a pair of generally plate-like parts each having a base portion and at least one longitudinally extending wing projecting from the base portion, each wing having an end portion extending from one end of the base portion towards the other end thereof and at least one of the wings also having a lateral projection extending laterally beyond said end portion and disposed between said end portion and said other end of the base portion, said parts being adapted to be disposed with the base portions in juxtaposed back-to-back relationship, in which disposition the end portions of the respective wings form a spigot formation for fitting closely within one of said tubes extending in one direction while the lateral projection lies outside said one tube, disposed for having the other of said tubes, extending in a different direction from said one tube, secured thereto;

abutment means on the parts to limit the insertion of the spigot formation into said one tube; and



a locking screw on each of said parts, the locking screws on the two parts being arranged so as to be in alignment when the parts are disposed so that the spigot formation is formed, whereby the locking screws may be screwed against one another in use to urge the respective end portions of said parts outwardly into frictional locking engagement with the interior surface of said one tube.

4,236,847

METAL CORNER FITTINGS FOR PICTURE FRAMES

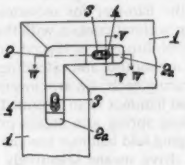
Hiroaki Yasuda, 17-go, 9-ban, Kumoi-cho, Nishinomiya, Hyogo Prefecture, Japan

Filed Jan. 12, 1979, Ser. No. 3,478

Claims priority, application Japan, Mar. 27, 1978, 53/39947; Jun. 1, 1978, 53/75305; Aug. 14, 1978, 53/111756; Sep. 27, 1978, 53/133417

Int. Cl.² G09F *1/12*

U.S. Cl. 403—402 **6 Claims**



1. A metal corner fitting for a wooden picture frame, comprising:

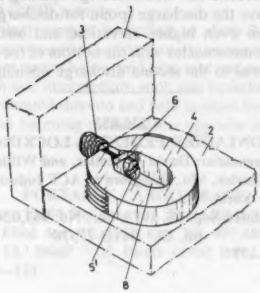
two leg pieces attached to each other to form an L and having a portion of the top surface a flat plane surface, shaped so that the surface opposite the top surface at least at the ends of said leg pieces being at an angle α to said portion of the top surface; said leg pieces further having slits therethrough, with the axes of said slits being inclined slightly through said leg pieces from the perpendicular to said portion of the top surface away from the ends of said leg pieces for allowing screws to be driven therethrough for assembling said picture frame.

4,236,848

FURNITURE CONNECTOR

Erich Röck, Höchst, and Bernhard Mages, Dornbirn, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed May 4, 1978, Ser. No. 902,815
Claims priority, application Austria, May 13, 1977, 3432/77
Int. Cl.[2] B25G *3/00*
U.S. Cl. 403—406 9 Claims



1. A furniture connector for connecting two furniture parts aligned and abutted at a right angle to each other, said furniture connector comprising:

a dowel-like housing having a central axis, said housing having axially extending therethrough an opening, said housing adapted to be fitted within a bore in a first furniture part and including a portion adapted to be positioned adjacent a second furniture part to be connected to the first furniture part, said portion of said housing being axially divided by at least one separating slot extending through said portion from said opening to the outer surface of said housing;

an elongated expansion member having an axis and extending through said portion of said housing, said expansion member having head means within said opening for rotation of said expansion member and thread means adapted to be threadably anchored in the second furniture part upon rotation of said head means and for thereby moving said housing and the first furniture part axially of said expansion member toward the second furniture part;

said axes of said housing and said expansion member extending at a right angle to each other; and

clamping means, positioned to be urged by said head means upon rotation thereof, for causing said housing, upon movement thereof toward the second furniture part, to expand outwardly against a wall of the bore formed in the first furniture part, in separate directions extending on opposite sides of said expansion member and diverging outwardly from said axis thereof.

4,236,849

METHOD OF GROUTING A DRILL HOLE

Henry K. Kennedy-Skipton, West Kilbride, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 826,190, Aug. 19, 1977, Pat. No. 4,157,264. This application Mar. 26, 1979, Ser. No. 24,080
Claims priority, application United Kingdom, Sep. 15, 1976, 38190/76
Int. Cl.[3] E02D *3/12*; E21D *20/02*
U.S. Cl. 405—261 8 Claims

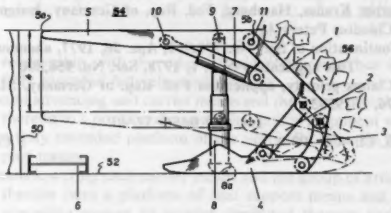
1. A method of grouting a drillhole with a hardened calcium sulphate hemihydrate plaster comprising forming a set-inhibited slurry composition containing calcium sulphate hemihydrate, water and dissolved set-inhibiting agent, said set-inhibiting agent being selected from the group consisting of water-soluble polymers and copolymers of acrylic acid, and water-soluble salts of said polymers and copolymers, said polymers and copolymers having molecular weights within the range 2,000 to 75,000 and mixing with said slurry in a drillhole a promoter reactable with said set-inhibiting agent, said promoter comprising at least one salt selected from the group consisting of the water-soluble salts of iron, copper and aluminium, whereby the effect of the set-inhibiting agent is neutralized and the setting of the composition is induced.

4,236,850

SHIELD TIMBERING FRAME FOR TIMBERING MINES

Manfred Koppers, and Ludwig Pawelski, both of Duisburg, Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,334
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757885
Int. Cl.[3] E21D *15/44*
U.S. Cl. 405—291 7 Claims



1. A shield timbering frame for timbering mines adapted to be located adjacent a mining face, comprising, a horizontal floor-engaging skid, a breaking shield extending obliquely over said skid and having a lower end and an opposite upper end, a pair of lemniscate guide rods having their one ends connected to said breaking shield at longitudinally spaced locations adjacent said lower end of said breaking shield and having an opposite end connected to said skid at longitudinally spaced locations adjacent the inner end of said skid, a roof cap member having an inner end pivoted to the upper end of said breaking shield and having an opposite outer end adapted to extend toward the mining face, at least one hydraulic ram engaged on said skid and pivotally connected to said roof cap at a spaced location from said inner end which is pivoted to said upper end of said breaking shield, said ram being made up of at least three telescopically interengaged, extensible and retractable parts, said ram extending perpendicularly from said skid, and pressure valve means associated with said ram to provide a substantially equal support pressure by said ram on said roof cap in an uppermost position and in a plurality of positions below said uppermost position, said ram extending perpendicularly from said skid in all positions of said roof cap.

4,236,851

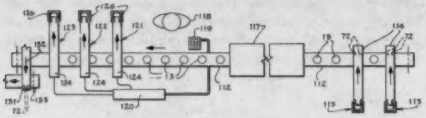
DISC HANDLING SYSTEM AND METHOD

Peter R. Szasz, Menlo Park, Calif., assignor to Kasper Instruments, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 778,723, Mar. 17, 1977, abandoned, which is a continuation of Ser. No. 628,496, Nov. 3, 1975, abandoned. This application Jan. 5, 1978, Ser. No. 867,326
Int. Cl.[3] B65G *51/02*
U.S. Cl. 406—72 16 Claims

1. In a disc transport system for handling and transporting discs a cyclically moving carrier, a first station for disposing discs onto said carrier, said first station including a member having an elongate surface with a portion overhanging said carrier and with ports for discharging gas downwardly at an angle with respect to that surface for lifting and carrying discs in spaced relation to and along that surface to a position over-

lying said carrier to be discharged onto said carrier, and a second station for retrieving discs from said carrier, said second station including a member having an elongate surface



with a portion overhanging said carrier and with ports for discharging gas downwardly at an angle with respect to that surface for lifting discs from said carrier and carrying them in spaced relation to and along that surface to another location.

4,236,852

APPARATUS FOR THE LOOSENING AND LIFTING OF AERATED PULVERIZED MATERIAL AT AN INCREASED PRESSURE FROM A SILO

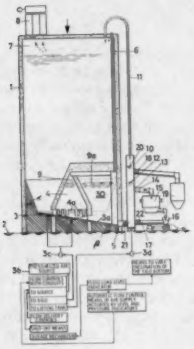
Werner Krauss, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters Ag.

Continuation of Ser. No. 790,961, Apr. 26, 1977, abandoned. This application Nov. 1, 1978, Ser. No. 956,800

Claims priority, application Fed. Rep. of Germany, May 6, 1976, 2619993

Int. Cl.³ B65G *53/40*

U.S. Cl. 406—90 **3 Claims**



1. A silo for storing, fluidizing and discharging particulate material, comprising:

an upright silo having a side wall and a bottom, said side wall having a discharge opening therethrough at the bottom;

a discharge chamber in the silo on the silo bottom, at one side of the silo between the silo contents and the discharge opening, serving to separate the discharge opening from the silo contents and being in communication with the discharge opening and with the silo interior, said discharge chamber defining an enclosed flow passage from the silo interior to the discharge opening;

an upright lifting tank adjacent the silo at one side thereof and having a top and a bottom and being in communication at its bottom with the discharge opening, the bottom of the lifting tank being substantially at the level of the silo bottom, and said lifting tank having an elevated spout above the level of said discharge opening; and

aeration means connected with the silo bottom in communication with the silo interior and the discharge chamber interior, to fluidize the silo contents at least at the bottom of the silo and cause them to flow into the discharge chamber, said discharge chamber enabling a substantially constant positive pressure to be attained at the discharge opening, dependent at least partially upon the level of material in the discharge chamber and being substantially independent of the level of material and pressure in the silo interior, the positive pressure which is attained at the discharge opening by said aeration means enabling the material to be lifted in the lifting tank to and through the discharge spout by only the pressure existing in the discharge chamber;

wherein a second elevated discharge opening is in the lifting tank above the discharge spout, for discharging the material at an even higher elevation, and auxiliary blower means communicates with the bottom of the lifting tank to lift material to the second discharge opening.

4,236,853

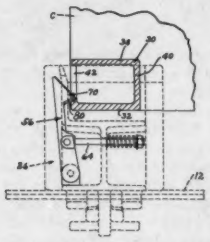
PLATED CONTAINER PEDESTAL LOCKING MEMBER

Joseph F. Niggemeier; David A. Stoller, and William J. Xander, all of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,024

Int. Cl.³ B61D *17/10*

U.S. Cl. 410—77 **4 Claims**



3. A container support for use on the deck of a railway flat car including a generally horizontal seat to support the lower corner of a container and a pair of connected walls arranged in a right angular relation to form side and end walls extending upwardly from the seat to restrain the container against horizontal movement, said support further comprising an intermediate wall extending longitudinally of the car below said horizontal seat; said side wall having a slot located above said horizontal seat; a releasable locking lever on each container support; means mounting the locking lever upon said side wall below said slot for generally pivotal movement adjacent the side wall about a generally horizontal axis extending longitudinally of the car; the upper portion of said locking lever having a protuberance extending within the slot and adapted to extend within an elongate container opening for restraining the container against upward movement at a lifting force below a predetermined minimum lifting force range; resilient means urging the upper portion of the locking lever and protuberance inwardly into the container opening; said protuberance having a lower cam surface for contacting said arcuate concave edge defining the lower portion of the elongate container opening, said lower cam surface being inclined upwardly with respect to the horizontal and being generally arcuate and convex in cross section to fit against the adjacent concave edge of the wall defining the lower portion of the elongate container opening in a generally nested relation; said protuberance being inclined with respect to the horizontal and being generally arcuate and convex in cross section to fit against the adjacent concave edge of the wall defining the lower portion of the elongate container opening when the container is lifted from the support; said protuberance further having a downwardly inclined upper cam surface adapted to contact the container upon lowering of a container onto the container support for urging the protuberance outwardly against the bias of said

resilient means, the protuberance being urged within the container opening by the resilient means upon seating of the container on the support; and an upward movement of the container being restrained by the lower cam surface on said protuberance until a predetermined minimum force range is obtained, whereupon said protuberance is urged outwardly to release the container; the improvement wherein said protuberance has a coating of cadmium thereon whereby to reduce said predetermined force range required to remove the container from said pedestal to within sixteen hundred (1600) to twenty-two hundred (2200) pounds.

4. A container support according to claim 3 wherein said resilient means comprises a rod pivotally connected at one end to said resilient means below said seat, said rod passing through an opening in said intermediate wall, and including a compression spring mounted thereon and held in place by said intermediate wall and fastening means at the opposite ends thereof.

4,236,854

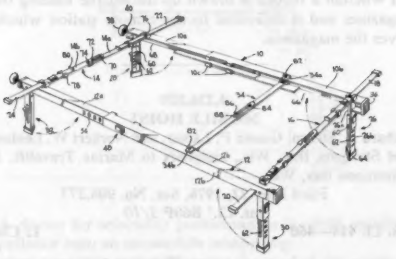
PORTABLE CARGO BRACE

Robert Rogers, 13204 Bellevue St., Silver Spring, Md. 20904

Filed Apr. 18, 1978, Ser. No. 897,484

Int. Cl.³ B60P *7/08;* **B61D** *45/00;* **B65J** *1/24*

U.S. Cl. 410—121 **12 Claims**



1. A cargo brace for retaining a cargo load in a cargo area comprising

(a) bracing means for contacting at least two walls of said cargo area to secure said cargo brace within said cargo area comprising a pair of side rails disposed in generally parallel fashion for preventing cargo from contacting oppositely disposed side walls of said cargo area, and a pair of lateral members interconnecting said pair of side rails for spacing said side rails from each other and for preventing cargo from contacting oppositely disposed end walls of said cargo area, and

(b) a plurality of support legs attached to said bracing means for bearing against a floor of said cargo area to support said bracing means above the floor and to secure the cargo brace within the cargo area.

4,236,855

APPARATUS FOR AND METHOD OF SEQUENTIALLY TRANSPORTING, ACCUMULATING AND STACKING A PREDETERMINED NUMBER OF GROUPS OF INDIVIDUAL SIMILAR FLAT ARTICLES AND THEREAFTER DEPOSITING THE ENTIRE STACK ON A CONVEYOR

Roland W. Wagner, and Clarence W. Heim, Jr., both of Cincinnati, Ohio, assignors to Warrick Equipment Corp., Cincinnati, Ohio

Filed Sep. 8, 1978, Ser. No. 940,477

Int. Cl.³ B65G *57/03*

U.S. Cl. 414—42 **19 Claims**

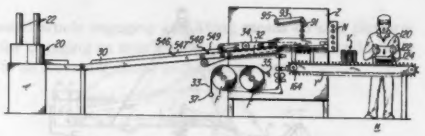
1. A device for sequentially accumulating in vertically stacked relationship and thereafter releasing the entire stack of a predetermined number of groups of individual flat articles, comprising:

means accumulating and advancing a plurality of flat, similar articles in end-to-end coplanar abutting relationship;

means successively subdividing a predetermined number of the foremost of said articles into individual groups;

means advancing the articles of each individual group onto a movable carrier means for and which is unique to each individual group of articles;

a vertically movable support means including a pair of complementary carrier member receptive platforms each of which are selectively movable from fully extended fully elevated positions to fully extended fully lowered positions, and thence from fully extended fully lowered positions to fully retracted fully lowered positions, and thence to fully retracted fully elevated positions in coplanar



relationship with the other of said platforms when at a fully extended fully elevated position;

means advancing said carrier means and the group of articles thereon to a position above and in vertical alignment with a fully extended platform of the vertically movable support means;

means lowering each carrier means and the group of articles thereon onto a platform of said support means and the preceding groups of articles deposited thereon until a predetermined number of individual groups of articles have been stacked upon said support means; and

means for removing, as a unit, the entire stack of groups of articles from said support means, while depositing said stack onto an output conveyor.

4,236,856

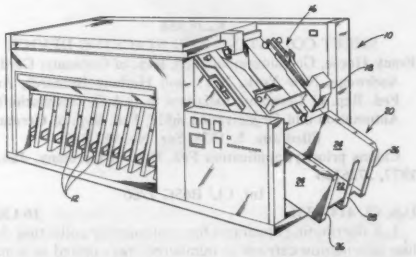
SHEET STACKING APPARATUS

Hans C. Mol, Wilton, and Michael A. Brown, Norwalk, both of Conn., assignors to Pitney Bowes, Inc., Stamford, Conn.

Filed Jun. 13, 1979, Ser. No. 48,296

Int. Cl.³ B65H *31/36, 33/06*

U.S. Cl. 414—54 **6 Claims**



1. Sheet stacking apparatus capable of stacking bundles of aligned sheets of paper in alternate offset relation or alternate skewed relation, comprising:

a storage bin for receiving a multiplicity of aligned bundles of paper sheets, said storage bin having a bottom wall, a pair of side walls, front stoppng members adjacent each of said side walls, and an adjustable central post situated between said front stopping members; and

means for feeding said aligned bundles of sheets along alternate side walls of said storage bin, and wherein said post may be positioned closer than said front stopping member to said feeding means to effect alternate offset stacking or

further away than said front stopping members from said feeding means to effect alternate skewed stacking.

4,236,857

APPARATUS FOR THE CONTINUOUS UNLOADING OF SHIPS

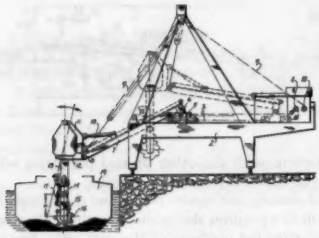
Josef Willi, Fischamend, Austria, assignor to Wiener Bruckenbau und 1 Eisenkonstruktions Atkiengesellschaft, Vienna, Austria

Filed Sep. 20, 1978, Ser. No. 944,240

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742499

Int. Cl.³ B65G *63/00*

U.S. Cl. 414—139 **19 Claims**



1. In an apparatus for the continuous unloading of ships, having a traveling crane and a boom disposed thereon for raising and lowering a feeding unit for bulk material that is to be unloaded and a bucket elevator fed by the feeding unit, the improvement wherein the bucket elevator comprises a main frame pivotally connected to the boom, a lower section including pulley means rotatable about a pulley axis and having the feeder unit connected thereto to form a feed assembly, means releasably connecting the lower section at a given point to the main frame, an endless bucket train coactive with the pulley means and having at least one releasable coupling to engage and disengage same therefrom, wherein the feed assembly is removable from the main frame upon the uncoupling of the bucket train and the releasing of the lower section from the main frame and replaceable by another such assembly including a lower section having the same distance between the pulley axis and the given point.

4,236,858

SHEET COLLATING AND STACKING DEVICE

Frank Hoese, Grossinzemoos, Fed. Rep. of Germany; Gerd von Aschwege, New York, N.Y., and Herbert Bernardi, Arget, Fed. Rep. of Germany, assignors to G.A.O. Gesellschaft für Automation und Organisation mbH, Fed. Rep. of Germany

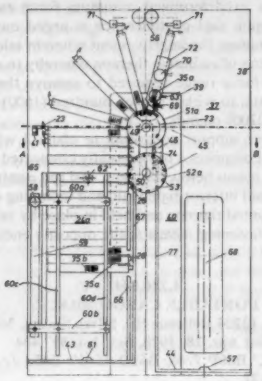
Filed Jun. 5, 1978, Ser. No. 912,216

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726130

Int. Cl.³ B65G *1/00*

U.S. Cl. 414—331 **16 Claims**

1. A distributing apparatus for continuously collecting sheet-like information carriers in numbered trays united in a magazine which are successively guided past a loading station, moving along an arcuately and narrowly curved guide opposite the loading station, opening up automatically, and, after leaving the curved guide, closing automatically, the cover of each tray being formed by the bottom of the tray lying on top of it, characterized in that the distributing apparatus comprises a receiving unit **(43)**, a driving unit **(45)** and a delivery unit **(44)** whereby coded and transportable magazines **(24)** having a given number of lockable and coded trays **(1–21)** connected to each other by a movable connection are continuously received from a waiting position, and whereby the trays **(1–21)** of the magazines are unlocked, guided on a guide one after the other past the loading station **(56)**, loaded, locked again, and delivered to a remote station from the distributing apparatus for subsequent processing, the trays each having a lock for positively locking each tray to a succeeding tray in the magazine



and wherein a record is drawn up during the loading of the magazines and is delivered to the remote station which receives the magazines.

4,236,859

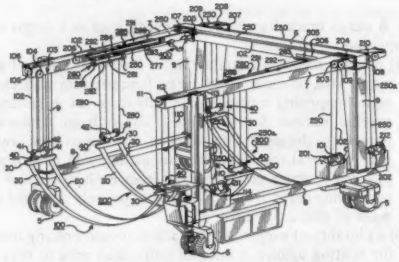
MOBILE HOIST

Richard A. Stearn; Gerald P. Lamer, and Norbert W. Lenius, all of Sturgeon Bay, Wis., assignors to Marine Travelift, Inc., Sturgeon Bay, Wis.

Filed May 22, 1978, Ser. No. 908,277

Int. Cl.³ B60P *3/10*

U.S. Cl. 414—460 **12 Claims**



1. A mobile hoist for lifting and carrying loads comprising

a frame freely movable upon a supporting surface and having spaced parallel support members carried above the supporting surface;

a pluraliy of vertically movable load supporting slings carried by said support members with each one of said plurality extending therebetween,

one of said plurality of load supporting slings being laterally movable upon said support members relative to another of said plurality of load supporting slings for effecting varying weight distribution of a load being supported thereby,

said one of said plurality of vertically movable load suporting sling which is laterally movable upon said support member relative to another of said plurality of vertically movable load supporting slings being operatively connected to one of said other plurality of load supporting slings by a common cable means for effecting vertical movement of both of said load supporting slings and equalizing the force applied between said load supporting

slings when engaging a load to be lifted and carried by said hoist,

another one of said plurality of vertically movable load supporting slings being operatively connected to a second cable means for effecting vertical movement thereof independent of the vertical movement of said load supporting means coupled together by said common cable, and

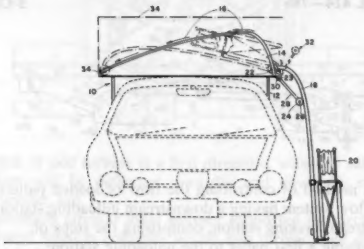
traveler means operatively positioned between said plurality of load supporting slings for moving said one of said plurality of load supporting slings laterally relative to another of said plurality of load supporting means.

4,236,860

APPARATUS FOR LIFTING A WHEELCHAIR ONTO THE ROOF OF AN AUTOMOBLE

David Gottlieb, 15 Devora Hanevia St., and Eliezer Zer, 6 Amos St., both of Bnei Brak, Israel

Filed Feb. 23, 1978, Ser. No. 880,572
Claims priority, application Israel, Feb. 24, 1977, 51534
Int. Cl.³ B60R *9/00*
U.S. Cl. 414—462 **27 Claims**



1. A device for selectably positioning an invalid's mobility aid appliance onto an automobile comprising:

support apparatus mountable onto the roof of the automobile;

transfer apparatus, mounted onto the support apparatus for selectably transporting a mobility aid appliance between a storage position and a utilization adjacent to the automobile; and

a cover member having a top and enclosed sides fixed thereto extending along the entire periphery thereof, articulately mounted onto the support apparatus so as to assume a raised orientation with one end tilted upwardly during the transport of the mobility aid appliance between storage and utilization positions and a lowered orientation when the mobility aid appliance is stored therebelow, said cover member being disposed exclusively above the automobile roof during storage and transport of said mobility aid appliance.

4,236,861

SCISSORS LIFT WITH PIPE HANDLER

John L. Grove, Greencastle, Pa., assignor to JLG Industries, Inc., McConnellsburg, Pa.

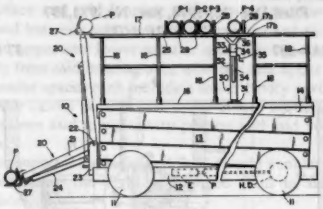
Filed Sep. 25, 1978, Ser. No. 945,325
Int. Cl.³ B66F *11/04*
U.S. Cl. 414—540 **24 Claims**

1. In combination,

a vehicle including a chassis, ground engaging means including drive means for supporting and moving the chassis, a workman's platform having a floor and means for supporting said workman's platform from said chassis at selected heights relative to said chassis,

first article engaging and lifting means on said vehicle for engaging an article substantially at ground level, for lifting said article to an elevated position at least as high as the platform, and for depositing said article on the platform,

means on said platform for storing a plurality of articles deposited thereon, and



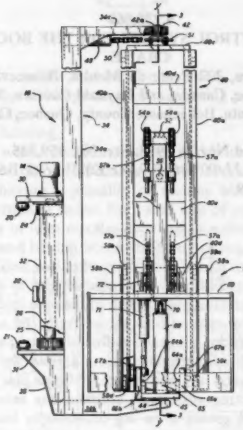
second article engaging and lifting means on said platform for engaging an article thereon and for lifting said article to an elevation above said storing means.

4,236,862

MATERIAL HANDLING APPARATUS

Edward J. McCormick, Greene, N.Y., assignor to The Raymond Corporation, Greene, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,082
Int. Cl.³ B60P *1/34*; B66F *9/14*
U.S. Cl. 414—633 **9 Claims**



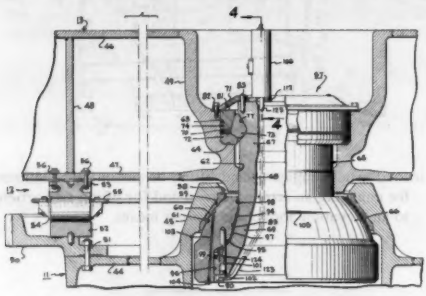
1. A mast assembly for a lift truck, comprising, in combination: a rigid mast having a carriage movable along said mast; mast support means including upper and lower support arms; first bearing means pivotally connecting said mast adjacent its upper end to said upper support arm for limited two-dimensional rotation of said upper end relative to said upper support arm; a tilt plate assembly having a rigid arm pivotally connected to said mast; second bearing means pivotally connecting said tilt plate assembly to said lower support arm for limited two-dimensional rotation of said tilt plate assembly relative to said lower arm; crank means journalled on said tilt plate assembly and carrying roller means, said roller means engaging said mast; means for rotating said crank means to tilt said mast; and rotational drive means for rotating said mast about an axis defined by said first and second bearing means.

4,236,863

CENTER PIN ASSEMBLY FOR POWER SHOVELS

George B. Baron, Marion, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 22, 1978, Ser. No. 973,397
Int. Cl.³ E02F *3/00*
U.S. Cl. 414—687 **37 Claims**



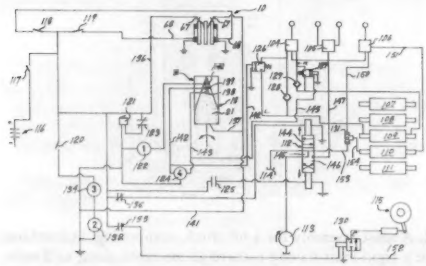
1. In a power shovel having a lower frame and an upper frame rotatably mounted on said lower frame, a center pin assembly for carrying radial and axial loads imposed on said upper frame comprising a pin disposed on the axis of rotation of said upper frame, rigidly secured to one of said frames and operatively connected to the other of said frames through a ball and socket connection, said ball and socket connection having a socket opening away from the frame to which said pin is secured.

4,236,864

SAFETY CONTROL SYSTEM FOR THE BOOM OF A CRANE

Raymond Couture, 222 Pente du Moulin, Beauceville, Beauce County, Quebec, Canada, and Raynald Couture, 307, Gagnon St., Lac Etchemin, Bellechasse County, Quebec, Canada (G0R 1S0)

Filed Nov. 9, 1978, Ser. No. 959,335
Int. Cl.³ B66C *23/00*; B66F *9/00*; E02F *3/00*; B66C *13/48*
U.S. Cl. 414—699 **9 Claims**



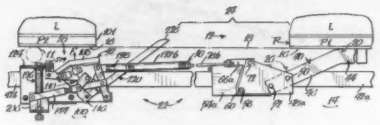
1. A safety control system for the boom of a crane, said system comprising a boom elevation actuator and a boom swinging actuator connected to the boom and operatively varying the elevation and the swing angle of the boom respectively, manual controls connected to said boom elevation and boom swinging actuators, a 3-way solenoid valve operatively connecting said actuators to an hydraulic fluid supply and to said manual controls and selectively displaceable between an enabling position allowing operation of said actuators by said manual controls, a disabling position allowing no operation of said actuators by said manual controls, and a partial enabling position allowing sole lowering of the boom, a boom elevation sensor unit sand a boom swinging sensor unit operatively connected to the boom and each producing an energizing output in response to safe boom elevational movement and to safe swinging of the boom respectively, a first relay connected to said sensor units and to said 3-way solenoid valve and operating the latter to the all enabling position thereof in response to simultaneous production of said energizing outputs by said sensor units, a second relay connected to said 3-way solenoid valve and selectively operating the latter to the partial, boom lowering, enabling position thereof to selectively lower the boom concurrently with all disabling of said manual controls, the manual control means connected to said second relay and selectively energizing the latter solely for boom lowering upon displacement of said 3-way valve to said partial enabling position.

4,236,865

METHOD FOR CONTROLLING THE FLOW OF ARTICLES AND PALLETS IN A CONVEYOR SYSTEM

Frederick E. Ullman, 245 Green Bay Rd., Glencoe, Ill. 60022

Filed Jun. 12, 1978, Ser. No. 914,341
Int. Cl.³ B65G *13/075*
U.S. Cl. 414—786 **5 Claims**



2. A method of controlling the flow of loaded pallets in a pallet flow system having a downstream unloading station and an upstream braking station, comprising the steps of:

conveying a first pallet to the unloading station;

sensing the presence of said first pallet at the unloading station;

conveying a second pallet to said braking station;

applying a braking force along the underside of said second pallet at said braking station in response to the presence of said first pallet at the unloading station to safely stop said second pallet substantially without shifting or spilling the load of said second pallet; and, concurrently,

preventing said second pallet from contacting said first pallet at said unloading station;

holding said second pallet while said first pallet is at said unloading station;

removing said first pallet from said unloading station;

sensing the removal of said first pallet from said unloading station; and, thereafter,

releasing said braking force from said second pallet; and

conveying said released second pallet downstream to said unloading station,

wherein said braking force is first applied along the underside of said second pallet at a location spaced upstream from the leading edge of said second pallet.

4,236,866

SYSTEM FOR THE OBTAINMENT AND THE REGULATION OF ENERGY STARTING FROM AIR, SEA AND RIVER CURRENTS

Valentin Zapata Martinez, No. 3 Lerida St., Madrid, Spain (20)

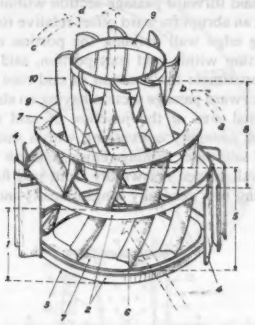
Filed Feb. 2, 1977, Ser. No. 764,998
Claims priority, application Spain, Dec. 13, 1976, 454.192
Int. Cl.³ F03D *3/04*
U.S. Cl. 415—2R **5 Claims**

1. A system for obtaining and regulating energy from fluid currents, such as wind air currents, said system comprising:

a generally circular outer deflector supported for circumferential rotation, said deflector including first and second groups of circumferentially spaced deflector vanes oriented such that a fluid current directed onto said deflector

vanes will orient said deflector with a circumferential space between said first and second groups of vanes facing said current said deflector being for deflecting and directing said currents in one specific direction for powering said system;

a generally circular intermediate turbine supported for circumferential rotation coaxially within said deflector, said turbine including a plurality of turbine vanes having a varying vertical and horizontal angular orientation along their surface to receive said current which is directed in said one specific direction by said deflector to cause rotation of said turbine in a first direction, whereby said current will be deflected inwardly and upwardly of said turbine; and



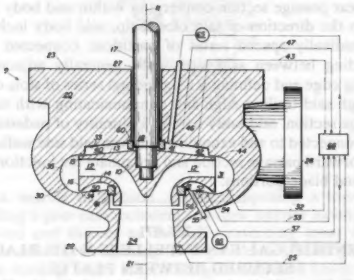
a generally circular inner diffuser supported for circumferential rotation coaxially within said turbine, said diffuser including a plurality of diffuser vanes generally angularly oriented opposite to the orientation of said turbine vanes to receive said current to cause rotation of said diffuser in a second direction opposite to said first direction and said current being directed inward and upward therefrom to be expelled coaxially out the top of said system.

4,236,867

FRICTION REDUCING ARRANGEMENT FOR HYDRAULIC MACHINES

Joseph H. Morris, Queenstown, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 27, 1979, Ser. No. 61,777
Int. Cl.³ F01D *11/00*
U.S. Cl. 415—26 **11 Claims**



10. A rotary hydraulic machine comprising:

a housing having a vertical axis and passage means for movement of pumped fluid therethrough;

a rotor rotationally mounted in said housing about said vertical axis, said rotor having axially spaced upper and lower rotor surfaces with means defining fluid flow channels extending therebetween;

an upper annular space defined between said upper rotor surface and said housing and a lower annular space defined between said lower rotor surface and said housing, said upper and lower annular spaces being declined radially from said housing axis, whereby said upper and lower annular spaces each include a lower cavity portion and an upper cavity portion said upper cavity portion extending between said lower cavity portion and said housing axis; and

means supplying pressurized fluid to said annular spaces for controlling the level of pumped fluid in said annular spaces.

4,236,868

TANGENTIAL RIF TURBINE WITH PARTICLE REMOVING MEANS

Hans D. Linhardt, Newport Beach, Calif., assignor to Airco, Inc., Montvale, N.J.

Filed Jul. 19, 1978, Ser. No. 926,042
Int. Cl.³ F01D *25/32, 9/02*
U.S. Cl. 415—121 A **8 Claims**

1. A radial inflow turbine for recovery of power from a stream of expandable gases while removing particles from the gas comprising:

a turbine housing,

a turbine wheel contained within said housing and adapted to rotate therein about an axis of rotation, said turbine wheel having a plurality of turbine blades located at a predetermined radius from said axis of rotation,

a plurality of inlet nozzles disposed in a circle adjacent said blades and having about the same radius as the radius of said blades, said nozzles located lateral to the midplane of rotation of said turbine wheel, said nozzles and said turbine wheel adapted to direct said gas through a sharp turn of about 90° after leaving said nozzles, and

an annular plenum chamber coaxially encircling said turbine blades and having a radius larger than the radius of said blades, said annular plenum being in communication with said blades and adapted to receive particles centrifuged from said expandable gas as it passes from said nozzle toward said blades.

4,236,869

GAS TURBINE ENGINE HAVING BLEED APPARATUS WITH DYNAMIC PRESSURE RECOVERY

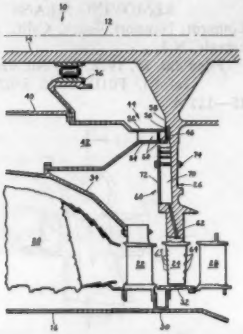
Vincent P. Laurello, Guilford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1977, Ser. No. 864,192
Int. Cl.² F01D *5/18*
U.S. Cl. 416—95 **7 Claims**

1. In a gas turine of the type having a compressor section having a flow path from which a fluid working medium such as air is discharged at an elevated pressure to a combustion section where the working medium is combined with a fuel in a combustion process and the products of combustion are directed at high velocity onto a plurality of turbine blades distributed about the periphery of a turbine rotor in a turbine

section, improved apparatus for ducting the working medium to the plurality of turbine blades for cooling and other purposes comprising:

first conduit means receiving a portion of the working medium from the flow path in the compressor section and having a discharge end located adjacent the turbine rotor and forming a tangential accelerator discharging the working medium substantially tangentially of an annular region of the rotor in the direction of rotor rotation and at a higher velocity than the velocity of the rotor in the annular region at operating speed, whereby a relative velocity exists between the discharged working medium and the rotor, and the temperature of the working medium is reduced by the higher velocity for greater cooling effect, the accelerator including a plurality of tangentially directed outlets arranged in an annular array adjacent said annular region of the rotor; and



second conduit means connected with the turbine rotor for rotation with the turbine blades and leading to the turbine blades at the periphery of the rotor, the second conduit means having inlets directed generally tangentially of the rotor and positioned radially outward from the outlets of the tangential accelerator and said annular region of the rotor at the same axial station as the accelerator outlets to receive the working medium discharged at high velocity from the tangential accelerator, the tangentially directed inlets connecting to a downstream portion of the second conduit means extending radially outward on the rotor from the annular region and having diverging walls forming diffusing means for diffusing the working medium received at the higher velocity and recovering the dynamic pressure of the working medium whereby static pressure is improved in the second conduit means.

4,236,870

TURBINE BLADE

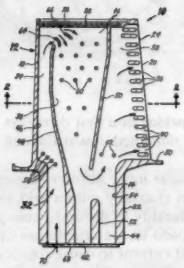
Elias Hucul, Jr., Wallingford, Conn., and Robert E. Gladden, Burlington, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1977, Ser. No. 864,194

Int. Cl.[2] F01D *5/18*

U.S. Cl. 416—97 R **8 Claims**

1. A turbine blade having a hollow elongated body including longitudinally extending leading and trailing edges and having a root portion at its inner end and a blade portion extending from said root portion and terminating at a closed tip at its outer end, said body having walls defining a triple-pass fluid passageway including three series connected passage sections providing a reversing fluid flow path through said body from said inner end to said trailing edge, said walls including a leading edge wall defining said leading edge, opposing side walls extending between said leading and trailing edges, and rib walls connected to and extending transversely between said side walls, said rib walls including a forward rib wall spaced rearwardly from said leading edge wall and extending in a generally longitudinally inclined direction within said blade portion from said inner end toward said leading edge wall and in the direction of said outer end, said forward rib wall having a terminal end longitudinally spaced from said closed tip, said leading edge wall and said forward rib wall partially defining a forward passage section therebetween opening through said inner end and extending through said root portion and into said blade portion in the region of said leading edge and terminating within said blade portion at an outer turning region proximate said closed tip, one part of said leading edge wall defining the portion of said forward passage section within said blade portion having an abrupt forward offset relative to another part of said leading edge wall defining the portion of said forward passage section within said root portion, said forward offset occurring proximate the junction of said root and blade portions, said forward passage section having an abruptly enlarged cross-sectional area at the junction of said root and blade portions and generally converging within said blade portion and toward said outer turning region, said rib walls including a rear rib wall spaced rearwardly from said forward rib wall and extending in a generally longitudinally inclined direction



from said closed tip toward said forward rib wall and in the general direction of said inner end, said rear rib wall having a terminal end proximate the junction of said root and blade portions, said forward rib wall and said rear rib wall partially defining a midchord passage section communicating with said forward passage section at said outer turning region between the terminal end of said forward rib wall and said closed tip, said midchord passage section converging within said blade portion and in the direction of said inner end, said rear wall rib and said trailing edge partially defining a rear passage section within said blade portion in the region of said trailing edge and terminating at said closed tip, said rear passage section communicating with said midchord passage section at an inner end, said rear passage section converging within said body portion and in the direction of said closed tip, said body including a longitudinally spaced series of partitions connected to and extending between said side walls generally adjacent said trailing edge and defining a longitudinal series of slots opening through said trailing edge and communicating with said rear passage section, said body having a plurality of pedestal members connected to and extending between said side walls within said forward passage section and proximate the junction of said root and blade portions.

4,236,871

CENTRIFUGAL FAN IMPELLERS WITH BLADES SECURED BETWEEN PLATES

Peter B. Hirst, Billingshurst, and Anthony J. Duthie, Horsham, both of England, assignors to Johnston Brothers (Engineering) Limited, Redhill, England

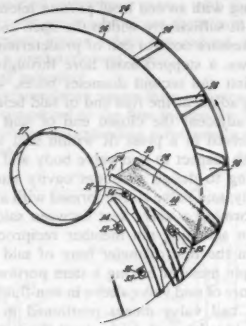
Filed Jan. 3, 1978, Ser. No. 866,785

Int. Cl.[3] F04D *29/28*

U.S. Cl. 416—186 R **1 Claim**

1. A fan impeller comprising a back plate, a front plate, and

a plurality of metal blades lying between the front plate and the back plate wherein each blade is of channel section having a base and two sides, the base of each blade lying normal to the planes of the front plate and the back plate, one side of each blade lying along the back plate, the other side of each blade lying along the front plate, and both sides of each blade extending from the base in the direction of rotation of the impellers in use, the inside working surface defined by the base and sides of each blade being hardened to a minimum hardness of Rockwell C55, the working surface of the base of each blade being convexly curved in the longitudinal direction of the blade, and wherein two bars are provided for each blade fixedly attached to the surface of the base of the respective blade remote from sides of the blade and extending between the front and back plates, the bars being spaced apart along the base of the blade and extending perpendicular to the front plate and back plate, the front plate the back plate and the blades being retained in assembled relation solely by bolts passing through the plates and through bores formed in the bars, the bolts fixedly attaching the bars to the front plate and the back plate.

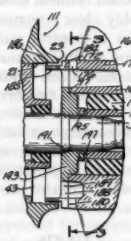


4,236,872

MARINE PROPELLER FISH LINE AND WEED CUTTER

Silas L. Metcalf, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 10, 1978, Ser. No. 923,177
Int. Cl.[3] B63H *1/26*
U.S. Cl. 416—146 R **20 Claims**



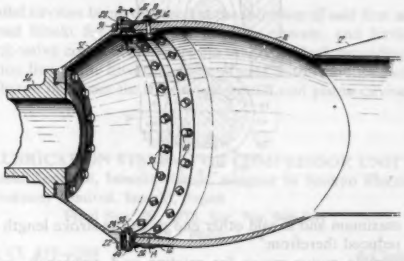
1. A marine propulsion device comprising a lower unit including a gear case including a hollow interior having at the rearward end thereof an inwardly extending inner circular surface defining an opening through which exhaust gases and engine cooling water are discharged from said lower unit, a propeller shaft rotatably journaled in said gear case and including a portion extending rearwardly of said gear case, a propeller including a hub mounted on said propeller shaft rearward portion for common rotation of said hub with said propeller shaft, a forward portion adjacent said rearward end of said gear case, and a propeller blade extending radially outwardly from said hub, a thrust washer carried by said propeller shaft in forward thrust transmitting engagement therewith and in forward thrust receiving engagement with said hub, and means for cutting fish lines and weeds including a sleeve supported by said thrust washer and extending into an area adjacent said inner circular surface of said gear case, said sleeve having a rearward cutting surface closely adjacent said forward portion of said propeller for cutting fish lines and weeds therebetween.

4,236,873

WIND TURBINE BLADE RETENTION DEVICE

Robert Sherman, West Hartford; Edward A. Rothman, South Glastonbury, and William Mandelbaum, Bloomfield, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 20, 1978, Ser. No. 944,222
Int. Cl.[3] B64C *11/04*; F03D *11/04*
U.S. Cl. 416—204 R **6 Claims**



1. A retention for a rotor blade, said blade having a load transmitting spar with a hollow cylindrical inboard shank contiguous therewith comprising:

a first cylindrical metallic sleeve member adapted to abut said shank about the inner periphery thereof, said first sleeve member extending slightly beyond the end of said shank, a second cylindrical metallic sleeve member adapted to abut said shank about the outer periphery thereof, said second sleeve member extending slightly beyond the end of said shank and having a radially inward extending flange portion abutting the extension of said first sleeve member adjacent the end of said shank, means for bonding said first and second sleeve members to said shank along the abutting surfaces thereof,

a first plurality of bolt means located about the periphery of said shank, each of said bolt means extending radially through said sleeve members and said shank and securing said shank between said sleeve members,

and a second plurality of bolt means located at a point slightly beyond the end of said shank, each of said second bolt means extending radially through and securing said first and second sleeve members in such manner that mechanical loading is transferred from said first to said second sleeve members through said second bolt means while said shank remains bonded to both said sleeve members.

4,236,874

DUAL CAPACITY COMPRESSOR WITH REVERSIBLE MOTOR AND CONTROLS ARRANGEMENT THEREFOR

Francis J. Sisk, Washington Township, Fayette County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 873,291, Jan. 30, 1978, abandoned. This application Mar. 2, 1979, Ser. No. 16,638
Int. Cl.[3] F04B *35/00, 49/00*; F16H *21/20*; F16C *3/28*
U.S. Cl. 417—315 **3 Claims**

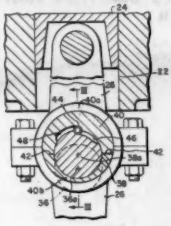
1. In a dual capacity hermetic refrigerant compressor of the reciprocating piston type:

a rotary crankshaft having an eccentric crankpin rotating therewith;

an eccentric ring having an inner and outer circumference mounted on said crankpin and rotatable relative thereto;

a connecting rod having a strap end encompassing the outer circumference of said eccentric ring in rotatable relation and its other end connected to reciprocate a piston in a cylinder as the crankshaft rotates;

means limiting the rotation of said ring relative to said crankpin between one end point and an opposite angularly displaced end point, said ring at said one-end point adding the maximum eccentricity of said ring to the eccentricity of said crankpin, said ring at said opposite end point adding only a part of the maximum eccentricity of said ring to the eccentricity of said crankpin, so that with said ring at said one end point the stroke length of said rod is at a



maximum and at said other end point the stroke length is reduced therefrom;

reversible motor means for rotating said crankshaft, said motor operating in one direction effecting the angular displacement of said ring relative to said crankpin to said one end point, and in the opposite direction effecting the angular displacement of said ring relative to said pin to said opposite end point;

said rotation limiting means comprises key means located at the interface of said ring inner circumference and the crankpin outer circumference; and

said crankpin includes a relieved area along an arcuate portion of its circumference, and said ring includes a relieved area along an arcuate portion of its inner circumference, and said key means is interposed in the space between said relieved areas.

4,236,875

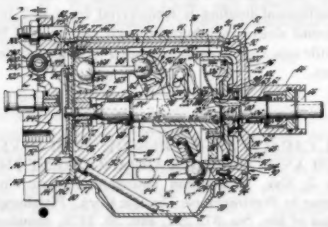
PRESSURE OPERATED HYDRAULIC CONTROL VALVE

Richard E. Widdowson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 896,741, Apr. 17, 1978, abandoned. This application Oct. 4, 1979, Ser. No. 81,867

Int. Cl.³ F04B *1/28;* **F16K** *31/12*

U.S. Cl. 417—222 **7 Claims**



1. A pressure operated hydraulic control valve assembly for controlling a compressor of an automative air conditioning system, the compressor having an hydraulically operated modulating means for varying the output thereof, and pump means for supplying hydraulic control fluid to said modulating means, said valve assembly comprising a housing, a tubular bellows cover and a cylindrical valve body, said bellows cover and said housing each having a closed end and an open end, the closed end of said bellows cover insertable sealingly into a fixed position in one end of said housing with its open end disposed inwardly, a sealed bellows seated in the closed end of said bellows cover and including a free end projecting toward the open end of said cover, said bellows having a predetermined cell control pressure, said valve body sealingly insertable in said housing with an end head portion telescopically received in a press-fit sufficiently within the open end of said cover to define a pressure control cell of predetermined size enclosing said bellows, a stepped axial bore through said valve body defining first and second diameter bores, said first diameter bore being adjacent the free end of said bellows and said second bore adjacent the closed end of said housing, a valve sleeve received in a press fit within said second bore sufficiently with respect to said valve body and the closed end of said housing to define an outlet cavity and an inlet cavity, respectively; said valve sleeve formed with an axial bore therethrough forming a valve seat between said inlet and outlet cavities, an actuating pin member reciprocatingly, sealingly received in the first diameter bore of said valve body, said actuating pin member having a stem portion passing through the axial bore of said valve sleeve in non-fluid blocking relation therewith, ball valve means positioned in said inlet cavity adjacent said valve seat, said actuating pin member extending through said first and second diameter bores into engagement with the free end of said bellows at one end thereof and said ball valve means at the other end thereof, said ball valve means operative to open and close communication between the inlet and outlet cavities in response to reciprocating movement of said pin member, aperture means in said housing and said bellows cover adapted to communicate a suction control pressure from said compressor to said bellows pressure control cell, first resilient means urging said bellows into engagement with the closed end of said cover and away from said pin member, second resilient means biasing said ball valve means in a direction to close communication between said inlet and outlet cavities, inlet port means in said housing adapted to place said inlet cavity in communication with said pump means, outlet port means in said housing adapted to place said outlet cavity in communication with said modulating means, whereby to vary the supply of control fluid from said inlet cavity to said outlet cavity during control of said compressor, said first resilient means acting to collapse said bellows and release said pin member so that said second resilient means may urge said ball valve means to adjustably close communication between said inlet and outlet cavities to control said compressor in one manner when the suction control pressure from the compressor exceeds the predetermined cell control pressure, and said bellows expanding to act against said first and second resilient means to force said ball valve means away from said valve seat to adjustably open communication between said inlet and outlet cavities to control said compressor in another manner when the suction control pressure from said compressor is less than said predetermined cell control pressure.

4,236,876

MULTIPLE COMPRESSOR SYSTEM

Bruce A. Fraser, Manlius, and Donald Yannascoli, Fayetteville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,974

Int. Cl.³ F04B *23/04*

U.S. Cl. 417—250 **5 Claims**

1. A multi-compressor system comprising:

a first stage motor-compressor unit including a first shell,

a first supply of lubricant disposed therein,

first compressor means for compressing a vapor,

first motor means for driving the first compressor means, and

a first lubricant overflow passage communicating the inte-

rior of the first compressor means with the first lubricant supply for passing lubricant therefrom into the first compressor means when the first lubricant supply reaches a predetermined level;

a second stage motor-compressor unit including a second shell

a second supply of lubricant disposed therein,

second compressor means for compressing the vapor,

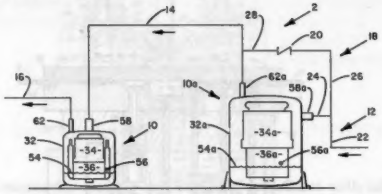
second motor means for driving the second compressor means, and

a second lubricant overflow passage communicating the interior of the second compressor means with the second lubricant supply for passing lubricant therefrom into the second compressor means when the second lubricant supply reaches a predetermined level;

a low pressure line including

a first section for transmitting vapor from a source thereof,

a second section connected to the first section for transmitting vapor therefrom and extending substantially at a right angle thereto, and



means connecting the second section to the first shell wherein vapor passes therein from the second section;

an intermediate pressure line for transmitting vapor from the first shell to the second shell;

a high pressure line for transmitting vapor from the second shell; and

a bypass line connecting the low pressure line with the intermediate pressure line for selectively bypassing the first shell and including

a first bypass section connected to the first section of the low pressure line for transmitting vapor therefrom and extending substantially collinear therewith,

means connecting the first bypass section with the intermediate pressure line wherein vapor passes thereto from the first bypass section, and

valve means for preventing vapor flow from the intermediate pressure line to the low pressure line via the bypass line.

4,236,877

HIGHLY ACCURATE LOW VOLUME METERING PUMP

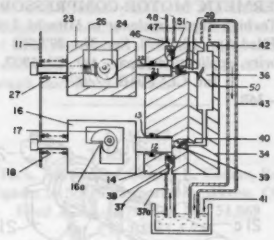
Russell R. Curtis, Westfield, Ind., assignor to Curtis-Dyna Products Corporation, Westfield, Ind.

Division of Ser. No. 892,700, Apr. 3, 1978, abandoned. This application Apr. 18, 1979, Ser. No. 31,049

Int. Cl.³ F04B *1/00*; F01B *31/14*

U.S. Cl. 417-265 **1 Claim**

1. A dual, piston-type pump assembly comprising a support bracket, two pistons supported for reciprocal parallel motion on said bracket, electrical power means and motion transmission means supported on said bracket for reciprocating said pistons, a first block supported on said bracket having two parallel vertically spaced cavities therein within which said pistons move, said cavities, each terminating in passages opening on an outer marginal surface of said block, the passage communicating with the lowermost of said cavities being check-valve controlled to form a discharge passage for the lowermost cavity, the passage communicating with the uppermost of said cavities being check-valve controlled to form a suction passage for the uppermost cavity, a second block mounted with a face thereof contiguous with said outer marginal surface of said first block, a cavity in said second block providing a gas-liquid separation chamber, and vertically spaced apertures in said second block communicatng with said chamber and registering with said passages in said first block, the passage controlling check valves for said passages to said



parallel cavities being disposed at the interface of said first and second blocks for controlling the flow therein, and further check-valve controlled passages in said first block providing a suction line to the lowermost one of said piston cavities and a discharge line from the uppermost one of said piston cavities.

4,236,878

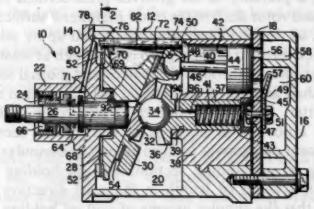
LUBRICATION SYSTEM FOR COMPRESSOR UNIT

Kiyoshi Terauchi, Isesaki, Japan, assignor to Sankyo Electric Company Limited, Isesaki, Japan

Filed Sep. 29, 1978, Ser. No. 946,967

Int. Cl.³ F04B *1/14*

U.S. Cl. 417—269 **8 Claims**



1. In a compressor including a compressor housing, a cylinder head having a suction chamber and a discharge chamber, a cylinder block mounted within said housing and having a plurality of cylinders, a plurality of piston means respectively slidably fitted within said cylinders to compress a refrigerant fluid, suction and discharge valve means for controlling the flow of fluid between said suction chamber and said cylinders and between said discharge chamber and said cylinders, a front housing on said compressor housing rotatably bearing a drive shaft for driving the compressor, means for converting the rotation of said drive shaft into reciprocating motion for imparting reciprocating motion to said piston means, a shaft seal assembly mounted on said drive shaft and within a shaft seal cavity formed in the front housing, means for effecting lubricating oil communication between said shaft seal cavity and the interior of said compressor housing, an oil deflector depending from the inner wall of said compressor housing, said front housing including an oil opening disposed adjacent said oil deflector and a passageway formed therein effecting oil communication between said oil opening and said shaft seal cavity, the improvement which comprises: a flange member extending from the depended end of said oil deflector along the inner wall of said compressor housing, said flange member forming with said oil deflector a groove in which oil directed to said oil opening by said oil deflector is collected and stored so that substantially all the directed oil flows into said oil

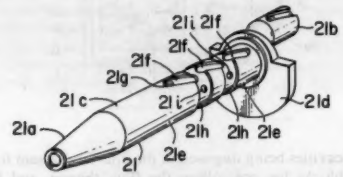
opening without again flowing down along the inner surface of said compressor housing.

4,236,879

HERMETIC MOTOR-COMPRESSOR

Nobuo Abe, Tochigi, Japan, assignor to Hitachi, Ltd., Japan

Filed Apr. 18, 1978, Ser. No. 897,503
Claims priority, application Japan, Apr. 20, 1977, 52-44475
Int. Cl.[3] F04B *17/00*
U.S. Cl. 417—368 1 Claim



1. A hermetic motor-compressor of a relatively small capacity, comprising a compressor assembly including a compression mechanism section and a driving electric motor section which are confined in a closed container, and an essentially vertical rotor shaft operatively connecting said compression mechanism and said driving electric motor section, said rotor shaft being formed from a single steel pipe which has been plastically worked to have an eccentric section at one end, an oil pump section at the other end and an intermediate journal section and being provided with a separate balance weight, said compressor assembly further having a bearing section adapted for cooperating with said rotor shaft, characterized by comprising a plurality of oil grooves press-formed from the outside of said rotor shaft in the outer peripheral surface of said rotor shaft, so that the lubricating oil sucked up by said pump section is delivered to said oil grooves through at least one oil passage bore formed through the wall of said journal section of said rotor shaft and distributed to said bearing section to lubricate the latter, the outer diameter of said rotor shaft being reduced at a portion or portions of said journal section between adjacent oil grooves to form at least one annular groove constituting an oil holding section, said oil holding section having such a width or length in the axial direction of said rotor shaft that the annular groove of said oil holding section extends beyond and partly overlaps the upper end of the lower oil groove and the lower end of the upper oil groove, whereby the lubricating oil is delivered from one oil groove to the other through said oil holding section to lubricate the whole part of said bearing section, and wherein at least one gas purging port is provided for expelling the gas introduced through said oil passage bore along with the lubricating oil, said gas purging port being formed through the wall of said rotor shaft in the annular groove of said oil holding section.

4,236,880

NONPULSATING IV PUMP AND DISPOSABLE PUMP CHAMBER

G. Kent Archibald, St. Paul, Minn., assignor to Archibald Development Labs, Inc., White Bear Lake, Minn.

Filed Mar. 9, 1979, Ser. No. 19,223
Int. Cl.[3] F04B *43/08, 21/00*
U.S. Cl. 417—478 42 Claims

1. A pump comprising:

a disposable pump chamber having an inlet, an outlet, and first and second flexible rolling diaphragm pumping chambers connected between the inlet and outlet;

a pump housing for receiving the disposable pump chamber;

a first cylinder in the housing positioned to receive the first flexible rolling diaphragm;

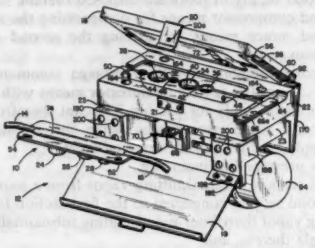
a second cylinder in the pump housing positioned to receive the second flexible rolling diaphragm;

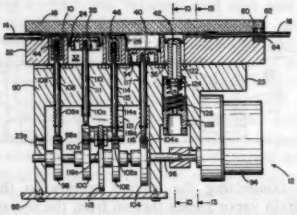
a first piston movable in the first cylinder;

a second piston movable in the second cylinder;

first valve means for controlling fluid flow between the inlet and the first flexible rolling diaphragm pumping chamber;

second valve means for controlling the fluid flow between





the first flexible rolling diaphragm pumping chamber and the second flexible rolling diaphragm chamber; and

drive means for causing relative motion of the first cylinder and first piston and relative motion of the second cylinder and second piston to vary the volumes of the first and second flexible rolling diaphragm pumping chambers.

4,236,881

LIQUID METERING PUMP

Robert K. Pfleger, Forest Lake, Minn., assignor to Ecodyne Corporation, Lincolnshire, Ill.

Filed May 3, 1978, Ser. No. 902,513
Int. Cl.[3] F04B *7/00*
U.S. Cl. 417—502 22 Claims

1. A pump for metering controllable quantities of liquid comprising:

A. a body having a pump chamber, a liquid inlet conduit and a liquid return conduit connecting said chamber to a source of said liquid, and a liquid discharge conduit connecting said chamber to an outlet for metered liquid:

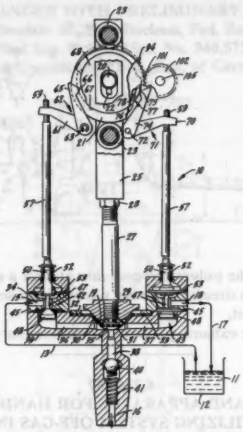
B. a reciprocating member in said chamber which moves in one direction to create a suction for drawing liquid from said source through said inlet conduit into said chamber and moves in the opposite direction to create pressure for pumping such liquid out of said chamber through said return conduit and said discharge conduit;

C. a first reciprocating poppet valve which is power driven to open said inlet conduit when said member moves in said one direction and which is moved to close said inlet conduit when said member moves in said opposition direction;

D. a second reciprocating poppet valve which is power driven to open said return conduit when said member moves in said opposite direction, and which is moved to close said return conduit when said member moves in said one direction, said second poppet valve being connected to a pivoted lever having a cam follower lug; and

E. means for controlling the output of said pump by control-

ling the length of time said second poppet valve opens said return conduit, comprising a rotating cam having an edge that pivots said lever and thereby opens said second poppet valve when said edge is in contact with said lug, the length of time said second poppet is open being controlled



by means for moving said edge out of contact with said lug, comprising a projection on said rotating cam located in a plane perpendicular to said edge, and an adjustable cam for contacting said projection and moving said edge axially out of contact with said lug, said projection and said adjustable cam being shaped like circular arcs.

4,236,882

APPARATUS FOR PRODUCING DROPS OR PORTIONS OF LIQUID AND VISCOUS MATERIALS AND FOR PRODUCING PELLETS THEREFROM

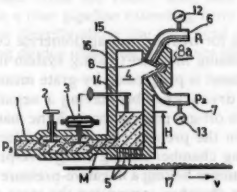
Otto Weinhold, Vienna, Austria, assignor to Sandco Ltd., Ottawa, Canada

Division of Ser. No. 815,011, Jul. 12, 1977, Pat. No. 4,156,495, and Ser. No. 589,083, Jun. 23, 1975, abandoned. This application Mar. 9, 1979, Ser. No. 19,242

Claims priority, application Austria, Jun. 24, 1974, 5186/74

Int. Cl.³ B29F *3/06*; B29C *23/00*; B29D *31/00*

U.S. Cl. 425—6 **10 Claims**



1. Apparatus for producing discrete drops of a liquid material, comprising the combination of, means forming a chamber closed on all sides for holding a body of the liquid material and a body of gas above the liquid level, nozzle means through which said material can be dispensed in a controlled manner from said chamber against a predetermined pressure, means connected to said chamber forming a source of pressurized gas at a pressure greater than said predetermined pressure and suction means for gas at a pressure less than said predetermined pressure, said pressurizing gas being adapted to elevate the pressure of said body of gas sufficiently to cause said material to be discharged through said nozzle means and said suction means being effective to reduce the pressure of said body of gas sufficiently to prevent the discharge of material through said nozzle means and cause the liquid to move back into the nozzle means, and cyclic operating means for producing a continuous series of cycles each of which comprises a first step during which said pressurizing gas is connected to said body of gas and causes a controlled portion of the material to be discharged through said nozzle means and a second step which connects said suction means to said body of gas and reduces the pressure of said body of gas sufficiently to stop the flow of material through said nozzle means.

4,236,883

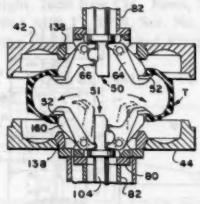
TIRE PRESS

Leonard G. Turk, Akron, and George E. Enders, Salem, both of Ohio, assignors to NRM Corporation, Akron, Ohio

Filed Jul. 5, 1979, Ser. No. 54,869

Int. Cl.² B29H *5/02*

U.S. Cl. 425—32 **50 Claims**



1. In a tire press having relatively movable top and bottom mold sections, a center mechanism comprising a segmented annular ring for each mold section, means for engaging each ring with the axial interior of the respective bead of a green tire radially to center such bead to its respective mold section before the beads contact the mold sections and the press closes, and actuator means for collapsing the segments of said rings radially to clear the inner diameter of such beads.

4,236,884

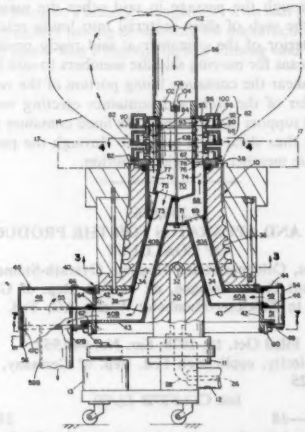
INTERNAL AIR COOLING OF TUBULAR PLASTIC FILM

Charles M. Schott, Jr., Gloucester, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed Sep. 5, 1975, Ser. No. 610,631

Int. Cl.³ B29D *23/04*

U.S. Cl. 425—72 R **6 Claims**



1. A rotary film blowhead fed centrally with thermoplastic

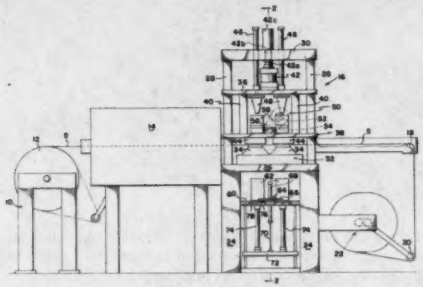
material for making tubular film comprising film cooling means with interior cooling rings and air supply connectors, said blowhead being rotatably connected to a stationary extruder, characterized in that the individual co-rotating air supply connectors are connected to stationary air flow means by segmented relatively rotatable air distributing rings which are sealed by sealing elements and of which the portion connected to the air flow means is stationary.

4,236,885

CONTAINER LINING

George A. West, Clare; William F. Kent, Beaverton; George L. Pickard, Beaverton, and Wilbur P. Winton, Beaverton, all of Mich., assignors to Leesona Corporation, Beaverton, Mich.

Division of Ser. No. 939,875, Sep. 5, 1978, Pat. No. 4,207,280.
This application Nov. 7, 1979, Ser. No. 92,172
Int. Cl.³ B29C *17/04, 27/16*
U.S. Cl. 425—514 **4 Claims**



1. Apparatus for applying a liner of thermoplastic sheet material to the interior of an open ended container comprising opposed die members having aligned passages therethrough and cooperating shearing surfaces adjacent the peripheries of the opposed ends of said passages, said die members being movable relative to one another between spaced open position and overlapped shearing position, sheet support means for supporting a web of thermoplastic sheet material extending between said die members when said members are in their open position, reciprocable container support means for advancing an open ended container through the passage in one die member into a ready position adjacent said web, plug assist means movable through the passage in said other die member for deforming the web of sheet material into lining relationship with the interior of the container at said ready position, die actuating means for moving said die members to said shearing position to shear the container lining portion of the web from the remainder of the web, and container ejecting means for moving said support means to pass the lined container through the opening thus sheared in said web through the passage in said other die member to an eject position.

4,236,886

METHOD AND APPARATUS FOR THE PRODUCTION OF COALDUST

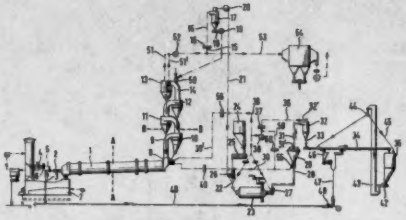
Jakob Ansen, Cologne; Heinz Hoppen, Overath-Steinenbrück, and Helmut Duill, Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Wedag AG, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 949,952
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745425
Int. Cl.³ F27B *15/00*
U.S. Cl. 432—14 **23 Claims**

1. A method for the preparation of coal for the firing of a calcination installation having a preheating stage, a calcination stage and a sintering stage for the production of cement clinker comprising the steps of:

mixing the coal with an inert input gas having a predetermined temperature and composition;

pulverizing the coal,



separating the pulverized coal into at least a stream of coaldust and a stream of exhaust gas bearing a selected residual of coaldust,

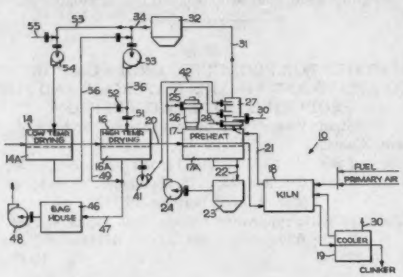
blowing the exhaust gas into the calcination stage.

4,236,887

METHOD AND APPARATUS FOR HANDLING AND UTILIZING SYSTEM OFF-GAS IN A PYRO-PROCESSING SYSTEM

Glenn A. Heian, Franklin, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 21, 1979, Ser. No. 41,240
Int. Cl.³ F27B *15/00*
U.S. Cl. 432—14 **26 Claims**



20. In a process for treating wet agglomerate cement material in pyro-processing material-treating system in which the material to be treated is progressed by grate means through a low-temperature drying chamber having a negative-pressure wind box in which off-gas passing through the material bed on the grate means in the preheat chamber is collected, a high-temperature drying chamber having a negative-pressure wind box, a preheat chamber having a negative-pressure wind box, a kiln and a cooling chamber comprising the steps of:

drawing preheat off-gas from the negative-pressure wind box of the preheat chamber;

elevating the temperature of a portion of the preheat off-gas from the negative-pressure wind box of the preheat chamber;

passing that portion of the temperature elevated preheat off-gas back into the preheat chamber;

directing kiln off-gas passing through the preheat chamber through a quench chamber;

passing excess preheat off-gas to the quench chamber to assist in modifying the temperature of the kiln off-gas directed into the quench chamber;

adding ambient air into the quench chamber to assist in modifying the temperature of the kiln off-gas;

passing the quenched kiln off-gas to the drying chamber as down-draft drying heat.

4,236,888

HEAT EXCHANGER WITH PRELIMINARY CALCINING

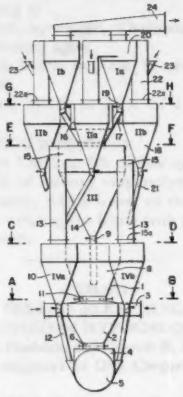
Heinz Jüger, Nevelstr. 40, 4630 Bochum, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,575

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1977, 2741307

Int. Cl.³ F27B *7/02*

U.S. Cl. 432—106 **4 Claims**



1. Heat exchanger for rotary kiln installations wherein cement klinker or the like is burned and wherein precalcining of raw dust or powder is effected in the heat exchanger through supplying fuel thereto, comprising a preheater for preheating the raw dust or powder having a plurality of interconnected cyclones at different elevations with introduction of raw dust or powder into a cyclone of higher elevation and flow of the raw dust or powder in contact with hot gases issuing from a rotary kiln having an inlet head for the introduction of the preheated dust or powder and an outlet for the discharge of klinker, a calcining device having as a lower stage mixing chamber and an upper stage calcining chamber, burner means for the introduction of fuel to the calcining device, a cooler for cooling klinker from the rotary kiln, said calcining device connected in a riser pipeline extending from the rotary kiln to the preheater directly above the inlet head of the rotary kiln, said calcining device including said lower stage constructed as a vertical mixing chamber with its lower open end disposed directly above the inlet head of the rotary kiln, means for varying the cross-sectional area of flow between the mixing chamber and the inlet head for waste gas from the rotary kiln and with tangentially disposed inlet unions for waste gas from the klinker cooler, and an upper stage constructed as a calcining chamber having means for supplying raw dust or powder thereto disposed above and in open communication with the mixing chamber, means for varying the cross-sectional area between the calcining chamber and mixing chamber to control flow of dust therethrough, said calcining chamber having outlet means comprising a plurality of tangentially disposed discharge channels for the discharge of gas into a plurality of cyclones.

4,236,889

DENTAL CLEANING DEVICE

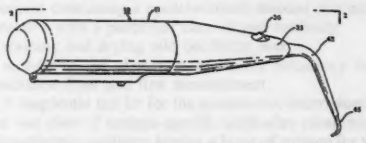
Winston F. Wright, 2660 Fair Cir., Reno, Nev. 89503

Filed May 17, 1979, Ser. No. 39,831

Claims priority, application United Kingdom, Mar. 28, 1978, 12007/78

Int. Cl.³ A61C *17/00*

U.S. Cl. 433—86 **8 Claims**



1. A self-contained, portable dental cleaning device comprising an elongated housing which comprises a first chamber containing a pump connected to an electrical motor and means for supplying energy to said motor, a switch means mounted on said device for manual control of the speed of rotation of said motor, a second chamber being adapted to contain a slurry substance, a vertical partition separating said first chamber from said second chamber, said partition including two apertures, an inlet conduit connecting said second chamber with said pump and an outlet conduit connecting said pump to one end of an elongated tube disposed in said second chamber, the opposite end of said tube being connected to a discharge nozzle extending outwardly from said second chamber, each of said conduits being in a sealing engagement with said partition, said second chamber having an opening for introduction of a dental cleaning slurry and a cap for tightly closing said opening.

4,236,890

PROCESS FOR PRODUCING TRANSFER PRINTED COTTON AND COTTON BLENDS

Eugene J. Blanchard, New Orleans; Gloria A. Gautreaux, and Robert J. Harper, Jr., both of Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 7, 1978, Ser. No. 913,418
Int. Cl.[3] D06P *1/16, 1/58, 3/60, 3/84*
U.S. Cl. 8—410 **3 Claims**

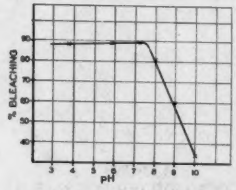
1. A process for improving the affinity of cellulose-containing fabrics for disperse dyestuffs, the process comprising
(a) screen printing a textile in the desired area with a formulation consisting of
(1) about 5-20%, by weight, of hexamethoxymethyl melamine crosslinking agent,
(2) about from 0.05% to 0.2%, by weight, of p-toluene sulfonic acid,
(3) about from 0.05% to 0.2% of 2-amino-2-methyl-1-propanol,
(4) about 0.5% of triethylamine
(5) about from 1.25% to 5% of butoxy triglycol and
(6) about 0.5% of carboxy vinyl polymeric thickener,
(b) drying the fabric, which is wet on the surface only,
(c) heat transfer printing the fabric with paper that contains disperse dyestuffs.

4,236,891

PROCESS FOR TEXTILE BLEACHING WITH DIBASIC MAGNESIUM HYPOCHLORITE

Michael Scardera, Hamden, and Garrett B. Schifilliti, Oakville, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 5, 1979, Ser. No. 9,316
Int. Cl.[3] D06L *3/08;* **C11D** *3/395*
U.S. Cl. 8—108 A **7 Claims**



1. A process for bleaching textiles which comprises contacting said textiles with an aqueous solution of dibasic magnesium hypochlorite, the pH of said aqueous solution being maintained at from about 3.5 to about 7.5 by the addition of an acid compound.

4,236,892

SEPARATION AND QUANTITATION OF COPROPORPHYRINS AND UROPORPHYRINS

Olga Duron, El Monte, Calif.; Richard J. Griffin, deceased, late of Lakewood, Colo., and by United Bank of Denver, N. A., personal representative, Denver, Colo., assignors to Whale Scientific, Inc., Commerce City, Colo.

Filed Dec. 1, 1978, Ser. No. 965,429
Int. Cl.[3] G01N *31/06, 31/08, 33/72, 21/64*
U.S. Cl. 23—230 B **11 Claims**

1. In the method for selective separation and quantitation of coproporphyrin and uroporphyrin in urine by ion exchange wherein a buffered urine sample is passed through an ion exchange resin and followed by washing non-adsorbed materials from the column, the steps comprising:
eluting and collecting the adsorbed coproporphyrin present on the ionic exchange resin with a first normality of HCl;
eluting and collecting the adsorbed uroporphyrin present on the ion exchange resin with a second normality of HCl differing from the first normality of HCl; and
individually measuring the concentrations of the adsorbed coproporphyrin and uroporphyrin so collected against a known standard.

4,236,893

METHOD FOR THE ASSAY OF CLASSES OF ANTIGEN-SPECIFIC ANTIBODIES

Thomas K. Rice, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 9, 1979, Ser. No. 28,348
Int. Cl.[3] G01N *33/54;* **H01L** *41/00*
U.S. Cl. 23—230 B **19 Claims**

1. A quantitative method for determining at least one class of antigen-specific antibodies comprising the steps of:
(1) contacting a liquid sample suspected of containing an antibody with the surface of a piezoelectric oscillator having a layer of antigen for which said antibody is specific adsorbed thereon;
(2) washing and drying said oscillator;
(3) measuring the resonance frequency of said oscillator;
(4) contacting said surface of said oscillator with a liquid reagent containing a predetermined amount of a material reactive with a particular class of said antibody;
(5) washing and drying said oscillator; and
(6) measuring the change in resonance frequency of said oscillator from said first measurement.

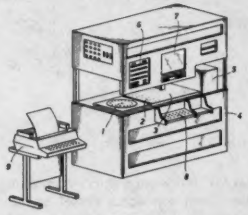
12. A diagnostic test kit for the quantitative determination of at least one class of antigen-specific antibodies comprising:
a piezoelectric oscillator having a layer of antigen for which said antibody is specific adsorbed thereon; and
a reagent containing a predetermined amount of a material reactive with a particular class of said antibody.

4,236,894

READOUT CIRCUIT IN AN AUTOMATIC CHEMICAL TESTING APPARATUS

David E. Sommervold, Houston, Tex., assignor to Hycel, Inc., Houston, Tex.

Continuation of Ser. No. 920,949, Jun. 30, 1978, abandoned.
This application Aug. 30, 1979, Ser. No. 71,338
Int. Cl.[3] G01N *21/75, 33/48*
U.S. Cl. 23—230 R **12 Claims**

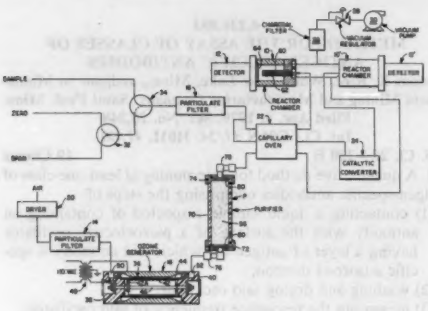


7. A method of operating a chemical analyzer in which a sample to be tested and reagents are mixed, and a voltage is obtained based on the spectral characteristics of said mixture, said method comprising the steps of:
converting said voltage to a digital signal at the beginning, the end and at a plurality of independent times between the beginning and end of a measurement period;
storing values related to said digital signals;
determining a value from a subset of said stored values; and
determining the results of said test in response to said determined value.

4,236,895
ANALYTICAL APPARATUS AND METHOD EMPLOYING PURIFIED OZONE

Quade R. Stahl, Springfield, Va., assignor to Meloy Laboratories, Inc., Springfield, Va.

Filed Jun. 11, 1979, Ser. No. 47,570
Int. Cl.³ G01N *21/76*
U.S. Cl. 23—232 R **13 Claims**

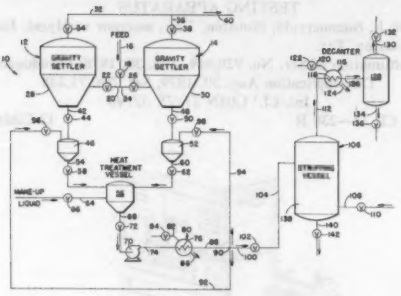


6. In an analytical method in which ozone is generated in an ozone generator and in which the generated ozone reacts in a reactor chamber to produce chemiluminescence, the improvement comprising purifying the output of the ozone generator, and supplying the purified ozone to the reactor chamber.

4,236,896
SLURRY REMOVAL PROCESS

Alan J. Morris, and Theodore A. Rado, both of Oklahoma City, Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Feb. 9, 1978, Ser. No. 876,254
Int. Cl.³ F17D *1/16*
U.S. Cl. 23—293 R **14 Claims**



1. In the process for removing a slurry containing suspended solids or insolubles from a process vessel maintained at elevated operating temperature and elevated operating pressure, the improvements which comprise:

passing the slurry from the process vessel to a temperature treatment vessel;

maintaining the pressure in the temperature treatment vessel substantially equal to the pressure in the process vessel;

mixing a make-up liquid with the slurry in the temperature treatment vessel;

withdrawing slurry from the temperature treatment vessel;

reducing the temperature of the withdrawn slurry;

returning a first portion of the cooled slurry to the temperature treatment vessel to cool the slurry contained therein; and

passing a second portion of the cooled slurry through pressure reducing means to flash the second portion of the cooled slurry to a preselected pressure to provide a lower temperature, lower pressure slurry.

4,236,897
FUEL PELLETS

Ian F. Johnston, 1682 Marguerite Ave., Corona Del Mar, Calif. 92625

Continuation-in-part of Ser. No. 900,240, Apr. 26, 1978, abandoned. This application Sep. 18, 1978, Ser. No. 943,393
Int. Cl.³ C10L *5/02*; C10F *7/06*; C10L *5/14*
U.S. Cl. 44—10 A **21 Claims**

1. A fuel pellet comprising from about 90 to about 99 percent by weight natural cellulosic material, and from about 1 to about 10 percent by weight particulate, synthetic polymeric thermoplastic material, the synthetic thermoplastic material being distributed as discrete particles throughout the fuel pellet, the thermoplastic material being solid at room temperature, being at least substantially minus 5 mesh, and having an injection molding temperature of at least 95° C., the cellulosic material having a free moisture content of from about 5 to about 15% by weight, and being at least substantially minus 5 mesh.

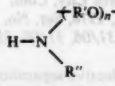
3. The fuel pellet of claim **1** including at least about one percent by weight calcium.

4,236,898
FRICTION MODIFIER FOR GASOLINE

Bryan T. Davis, West Bloomfield, and James B. Retzloff, Royal Oak, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed May 3, 1979, Ser. No. 35,792
Claims priority, application Finland, May 12, 1978, 781503
Int. Cl.³ C10L *1/24*
U.S. Cl. 44—66 **6 Claims**

1. As a composition of matter, a liquid hydrocarbon fuel for use in a spark-ignited internal combustion engine comprising a major amount of normally liquid hydrocarbon of the gasoline boiling range and a friction-reducing amount of an additive selected from sulfurized fatty acid esters, sulfurized fatty acid amides and sulfurized fatty acid ester-amides of an alkanol amine, said amine having the formula



wherein R' is divalent aliphatic hydrocarbon radical containing 2–4 carbon atoms, n is an integer from 1 to 10, and R'' is selected from hydrogen and the group —R'O)$_n$—H.

4,236,899

GAS GENERATOR FOR CATALYTICALLY REACTING LIQUID, HYDROCARBON CONTAINING FUEL TO BE EVAPORATED WITH AN OXYGEN CONTAINING GAS AT ELEVATED TEMPERATURE TO FORM A FUEL GAS, PARTICULARLY FOR SUPPLYING INTERNAL-COMBUSTION ENGINES

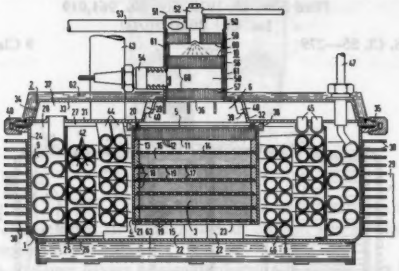
Peter Gulden, Erlangen; Friedrich Kozdon, Spardorf; Eugen S. de Bucs; Walter Küsebauch, both of Erlangen; Helmut Forster, Neunkirchen; Mathias Schnicke, Uttenreuth; Heinz Christoph; Berthold Pfadenhauer, both of Nuremberg, and Gerald Edinger, Berlin, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 779,901, Mar. 21, 1977, abandoned. This application Sep. 20, 1978, Ser. No. 943,762

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1976, 2614670

Int. Cl.[3] C10B *1/00;* C10G *9/04*

U.S. Cl. 48—89 31 Claims



1. A gas generator for catalytically reacting liquid hydrocarbon containing fuel to be evaporated with a gas containing oxygen at elevated temperatures to form a fuel gas comprising:

a. a heat resistant housing including a lower cup-shaped part and a removable lid;

b. a replaceable cartridge disposed centrally in said housing spaced from the sides and bottom thereof, comprising:

(i) a tubular casing having an open inlet and an open outlet and;

(ii) a first plate containing a plurality of holes;

(iii) a second plate containing a plurality of holes;

(iv) means supporting said first plate at the inlet end of said casing and said second plate at the outlet end of said casing, said plates thereby defining a reaction chamber; and

(v) a packed bed of catalyst disposed within said casing between said first and second plates.

c. means disposed in said lid adapted to have the reaction media consisting of the liquid hydrocarbon fuel and gas containing oxygen supplied thereto for conducting said reaction media to the inlet end of said tubular casing, said inlet end of said tubular casing being in sealing contact with said means for supplying and forming a mixing chamber at said inlet end; and

d. means for removing the fuel gas from said housing whereby, when said catalyst is no longer effective, replacement thereof requires only removing said lid and replacing said cartridge, removal of said cartridge also permitting access to said housing for cleaning thereof.

4,236,900

ELECTROSTATIC PRECIPITATOR APPARATUS HAVING AN IMPROVED ION GENERATING MEANS

Richard A. Fitch, La Jolla; James E. Drummond, Coronado, and Alfred A. Mondelli, Del Mar, all of Calif., assignors to Maxwell Laboratories, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 877,123, Feb. 13, 1978, abandoned, which is a continuation of Ser. No. 754,236, Dec. 27, 1976, abandoned. This application Mar. 30, 1978, Ser. No. 891,826

Int. Cl.[2] B03C *3/12, 9/02*

U.S. Cl. 55—138 37 Claims

1. A multi-stage system for removing particles from a gaseous medium carrying the same, comprising:

a flow channel through the system through which the gaseous medium passes in a downstream direction;

a first precipitating stage within said channel comprising an electrostatic precipitator of the type which has at least one charged wire within said channel for producing a corona discharge for charging particles within the gaseous medium, and at least one collecting plate spaced from said wire for collecting the charged particles;

a second precipitating stage within said channel, said second stage being located only downstream of said first stage and comprising at least one conductive shell means, each shell means having a corona discharge means located therewithin, adjacent collecting plate means associated with and spaced from each said shell means, the space between said shell means and said associated collecting plate means defining a pathway within said channel through which the medium passes, said shell means being spaced and charged to a sufficient potential to maintain a strong generally uniform electric field between each of said shell means and said associated collecting plate means, each of said shell means having a plurality of openings therein through which ions generated by said corona discharge means can pass and enter said pathway to charge the particles within the medium, said openings being sufficiently large to pass enough ions therethrough to charge the particles while not being so large so as to significantly disrupt the generally uniform electric field, said electric field driving said charged particles toward said associated collecting plate means where they are collected thereon.

4,236,901
AIR CLEANER WITH SECONDARY AIR FILTER ELEMENT

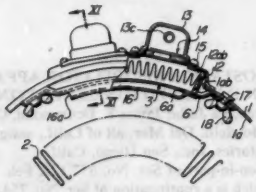
Yasutosi Kato, Anjo; Hideo Kamo, Chiryu; Tadashi Ogawa, Kariya; Kazuhiko Ito, Toyota; Katsuziro Sato, Toyota, and Tatsuo Asai, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 816,470, Jul. 18, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,337

Claims priority, application Japan, Aug. 6, 1976, 51-105755[U]

Int. Cl.[2] B01D *50/00*

U.S. Cl. 55—276 3 Claims



1. An air cleaner for an engine, comprising:

a generally cylindrical air filter element case having an air inlet through which air is to be admitted in use, a primary air outlet and a secondary air outlet opening;

a generally cylindrical primary air filter element encased in said case and generally concentrically disposed and interposed therein between said air inlet and said primary air outlet, so that air admitted through said inlet and discharged through said primary air outlet passes through and is filtered by said primary air filter element;

a housing provided as an outward protrusion on said case, covering said secondary air outlet opening and communicating therethrough with the inside of said case functionally upstream of said primary air filter element, said secondary air outlet opening defining an air inlet means for said housing so that some of the air admitted through said inlet in use may pass from said case, through said secondary air outlet opening or air inlet means and into said housing without passing through said primary air filter element;

means defining an air outlet from said housing which also serves as a secondary air outlet from said case;

a secondary air filter element disposed in said case and at least partially in said housing thereof and being interposed between said air inlet and said secondary air outlet, so that air admitted through said inlet and discharged through said secondary air outlet passes through and is filtered by said secondary air filter element;

said secondary air filter element including an air filter medium through which air may pass in being filtered thereby, and a container made of resilient material, perimetrically bounding said air filter medium and holding said air filter medium therein;

a retaining member on said case for air-tightly and detachably-retaining said secondary air filter element in place, said retaining member including outwardly-bowed curved surface means engaging said secondary air filter element and pressing said secondary air filter element centrally outwardly causing it to extend arcuately in a generally concentric sense relative to the general cylindricality of said case and causing there to be a greater clearance radially between the primary air filter element and the secondary air filter element than would exist were the secondary air filter element less arcuate than said retaining member presses it to become; said retaining member having opening means therethrough in order to permit air to have access therethrough to said secondary air filter element;

said case having a generally cylindrical sidewall having said secondary air outlet opening therethrough;

said housing having a generally arcuate outer wall that is generally arcuate generally concentrically with said case sidewall;

said housing arcuate outer wall having at least one generally cup-shaped valve housing provided thereon as a radially outward protrusion therefrom;

said secondary outlet being provided through said cup-shaped valve housing;

a reed valve assembly disposed in said cup-shaped valve housing of said casing and interposed between said secondary air filter element and said secondary air outlet; and

a noise-decreasing silencer cover which is medially-bowed-outwards arcuate in cross-section correspondingly with said retaining member, and being secured in radially inner facially covering relation to said retaining member, said silencer cover including two angularly opposite ends, with one of these said ends being open and the remainder of said silencer cover being closed.

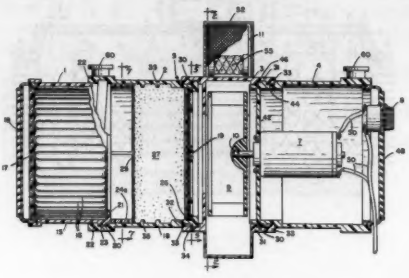
4,236,902
MODULAR AIR PURIFYING DEVICE

Roy A. Fricke, 1034 Ashland Ave., River Forest, Ill. 60305

Filed Nov. 15, 1978, Ser. No. 961,019

Int. Cl.[3] B01D *50/00*

U.S. Cl. 55—279 9 Claims



1. A modular air purifying device including, in combination:

blower means operatively disposed within a blower casing;

motor drive means operatively connected to said blower means for rotatably driving said blower means;

air neutralizer section means comprising an air neutralizer casing therein containing a body of granules of chemical neutralizing compound for removing and absorbing undesired irritants, gases, vapors, and airborne solids from said air as it passes therethrough,

said air neutralizer section means operably positioned adjacent said blower means in axial alignment therewith,

air filter section means operably positioned adjacent said air neutralizer section means and comprising a coil of folded fibrous filter for filtering particulate material from said air as it passes therethrough,

means to compress said granules by applying an axial force on said granules therewithin in compact aggregation and to preclude loose spots, pockets and voids from occurring within said body of granular material, and to thereby more effectively expose said drawn air to an optimal amount of said granules to in turn more effectively absorb said undesired irritants, gases, vapors and airborne solids from said air as it passes therethrough while simultaneously preventing said granules from noisily moving within said neutralizer section upon activation of said motor drive and blower means,

both said air neutralizer section means and said air filter section means each being removably mounted for engage-

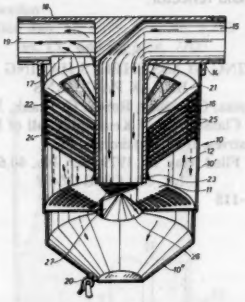
ment with one another as well as interchangeable engagement with said blower means separately, such that upon activation of said motor drive means, said blower means rotates to draw air into and through first said filter section means and in turn said air neutralizer section means to provide purified air which is in turn exhausted from said blower means.

4,236,903

AIR CLEANER

Sven O. Malmsten, Raberga, Vintrosa, Sweden (S-71015)

Filed Jul. 17, 1978, Ser. No. 925,529
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—325 **3 Claims**



1. An air cleaner for the removal of contaminants in a flow of contaminated air through said air cleaner, said air cleaner comprising:

a container having an elongated centrally located inlet tube and an outlet opening, said contaminated air flowing into said inlet tube and clean air flowing out of said outlet opening;

dividing means for dividing said container into air and substance chambers, said air chamber for containing said contaminated air and said substance chamber for containing contaminants removed from said air, said dividing means comprising a plate with a plurality of arcuate perforations extending radially thereon and a conical portion located thereon so that said contaminated air flows from said inlet tube onto the apex of said conical portion; and

separating means for removing said contaminants from said contaminated air, said separating means comprising a plurality of funnel-shaped discs located in said air chamber and coaxially around said inlet tube, each of said discs having means defining openings therethrough, said means defining openings being non-aligned with adjacent discs.

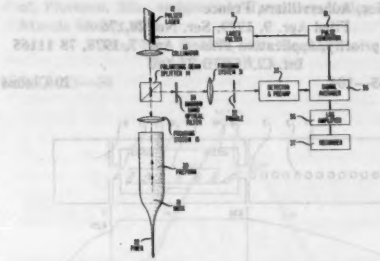
4,236,904

METHOD FOR MONITORING OPTICAL FIBER DRAWING

Paul D. Lazay, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 11, 1979, Ser. No. 47,640
Int. Cl.³ C03B *37/02*
U.S. Cl. 65—2 **9 Claims**

1. A method for drawing optical fiber comprising drawing the fiber from a reservoir of material, the method CHARACTERIZED BY the steps of: launching pulses of electromagnetic energy to which the material and the fiber are transparent into the reservoir to couple the pulses into the drawn fiber, resulting in pulses travelling through the fiber away from the reservoir; and detecting electromagnetic energy scattered back through the fiber and the reservoir.



4,236,905

METHOD FOR CONTINUOUSLY MONITORING THE COMPOSITION OF GLASS PARTICULATE DURING THE PRODUCTION OF OPTICAL FIBER

Franklin W. Dabby, Woodbridge, and Ronald B. Chesler, Cheshire, both of Conn., assignors to Times Fiber Communications, Inc., Wallingford, Conn.

Filed Jul. 13, 1979, Ser. No. 57,457
Int. Cl.³ C03B *20/00, 37/07, 37/075*
U.S. Cl. 65—3 A **6 Claims**

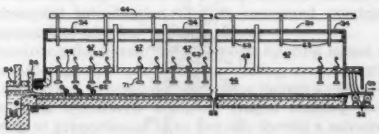
1. In a process for the production of optical fiber which comprises preparing a preform by depositing and sintering borosilicate particles on a cylindrical glass rod, heating said preform to the drawing temperature and drawing said preform into optical fiber, the improvement comprising continuously monitoring the boron oxide content of the borosilicate particles as they are deposited via infra-red spectrophotometry.

4,236,906

REDUCING TIN DRIP WITH SULFUR CONTAINING GAS

Merritt J. Hummel, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1979, Ser. No. 62,831
Int. Cl.³ C03B *18/20*
U.S. Cl. 65—27 **9 Claims**

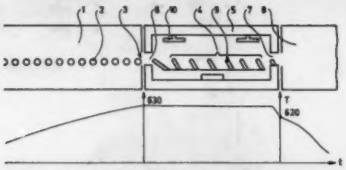


1. A method for reducing tin drip in a glass forming process in which the glass passes through a forming chamber containing a bath of tin comprising contacting tin on said chamber roof with a gas containing sulfur in order to convert said tin to a tin-sulfur compound by reaction with said gas containing sulfur.

4,236,907
METHOD FOR BENDING GLASS SHEETS AND APPARATUS THEREFOR

Henri Mairlot, Chatelet, Belgium, assignor to Saint-Gobain Industries, Aubervilliers, France

Filed Apr. 9, 1979, Ser. No. 28,175
Claims priority, application France, Apr. 7, 1978, 78 11165
Int. Cl.³ C03B *23/025*
U.S. Cl. 65—104 **20 Claims**



1. An improved method for bending of sheets of glass of the type which includes heating a glass sheet, advancing the heated glass sheet to a plurality of curved rods, imparting a predetermined curvature to the glass sheet, and tempering the curved glass sheet, the improvement wherein:

(a) the glass sheet is heated in an oven prior to imparting a curvature thereto to a first temperature range slightly greater than the temperature necessary for commencing the tempering step; and

(b) generally maintaining the glass sheet in said first temperature range while imparting said predetermined curvature thereto and until the tempering step is commenced.

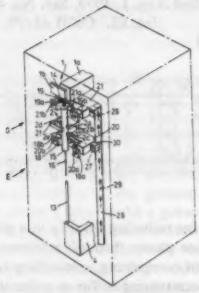
10. An improved glass bending apparatus of the type having a plurality of curved rods having a centrally arched portion each pivotable about an axis passing through its two ends to provide an envelope of a predetermined curvature for imparting a curvature to a sheet of heated glass being advanced thereof, a rotatable tubular sleeve disposed about each rod, a plurality of graphite bearing rings disposed at spaced locations between each rod and sleeve for supporting each of the rotatable tubular sleeves about one of the curved rods, the improvement comprising:

(a) means for injecting a fluid through the rods at a temperature substantially below the temperature of the heated glass, so that the graphite bearing rings are maintained in a substantially non-oxidizing environment.

4,236,908
SEALING GLASS ENVELOPES

Brian E. Head, Bexley, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 14, 1979, Ser. No. 39,067
Int. Cl.³ C03B *23/08*
U.S. Cl. 65—108 **4 Claims**



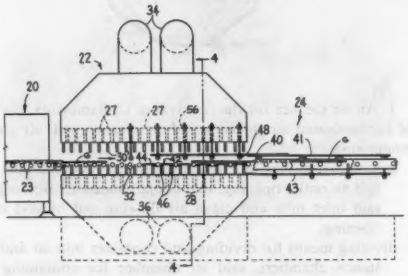
1. A method of fusing an article in a controlled atmosphere in a sealed enclosure comprising the steps of placing said article in said enclosure adjacent a solid reflector, directing radiant heat energy at said article to be fused and a front reflecting surface of said reflector to fuse said article, and releasing a jet of inert gas onto a back surface of said reflector remote from said article to minimize contamination of said reflector by said fused article and to cool said reflector.

2. Apparatus for fusing an article comprising a sealed enclosure which can be opened, means for supporting said article within said enclosure, a solid reflector disposed in said enclosure adjacent a position to be occupied by said article, radiant heating means for directing radiant heat onto said article and a front reflecting surface of said reflector to fuse said article, and a gas supply port opening in the vicinity of said position and connected to an inert gas supply to release a jet of inert gas onto a back surface of said reflector remote from said article to minimize contamination of said reflector by said fused article and to cool said reflector.

4,236,909
PRODUCING GLASS SHEETS HAVING IMPROVED BREAK PATTERNS

Dean L. Thomas, Glenshaw; Robert G. Frank, Murrysville, and George R. Claassen, New Kensington, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 18, 1979, Ser. No. 40,603
Int. Cl.³ C03B *27/04*
U.S. Cl. 65—115 **9 Claims**



1. Apparatus for heat-strengthening glass sheets, particularly those having a shorter dimension of at least two feet (60 cm) so that the resulting heat-strengthened glass sheet when installed in a building is retained in a window frame when fractured rather than developing a break pattern that causes pieces to separate from the remainder of the sheet when breakage occurs, said apparatus comprising a tunnel-type furnace and a glass sheet cooling station arranged in end to end relation, means for conveying a series of glass sheets along an essentially horizontal path through said furnace and said cooling station, said cooling station comprising a set of nozzles disposed on each side of said path along the length of said cooling station and baffle means disposed between a downstream portion only of each of said sets of nozzles and said path to provide essentially continuous walls extending transversely of said path beyond the lateral edges of glass sheets moving between said walls longitudinally of a downstream portion of said cooling station.

6. A method of fabricating a heat-strengthened glass sheet having a break pattern on fracture that permits the fractured glass sheet to remain within an installation frame comprising heating said sheet to a temperature sufficient for tempering, force cooling said heated glass sheet sufficiently to develop a temperature gradient from its major surfaces to the center of its thickness that is steeper than the temperature gradient produced by natural cooling, and before the glass sheet cools to the strain point at the center of its thickness, discontinuing said

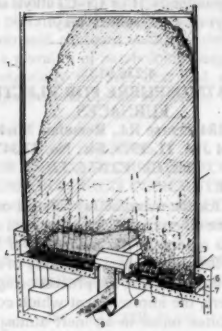
force cooling and retarding the rate of glass sheet cooling at the major surfaces to a rate less than the rate of cooling the edge surfaces of said glass sheet by supporting said glass sheet immediately after said force cooling with its major surfaces facing continuous walls closely spaced relative to said major surfaces while the edge surfaces face the space between said walls until said sheet develops a more uniform surface compression stress pattern over the entire extent of said glass sheet within an edge portion that is relatively highly stressed in compression.

4,236,910

METHOD OF BIOLOGICALLY DECOMPOSING ORGANIC MATERIAL, AND APPARATUS FOR CARRYING OUT THE METHOD

Åke Norin, Eskilstuna, and Tore Nordlund, Torshälla, both of Sweden, assignors to Armerad Betong Vagforbattringar AB, Stockholm, Sweden

Filed Jan. 12, 1979, Ser. No. 3,395
Int. Cl.³ C05F *11/06, 7/00*
U.S. Cl. 71—9 **5 Claims**



1. An apparatus for biologically decomposing organic material by the action of microorganisms thereon in the presence of a medium containing an oxygen-gas, said apparatus comprising

(a) a vessel having four upstanding side walls to laterally contain a mass of organic material,

(b) a first inlet adjacent the top of said vessel for the introduction of organic material,

(c) an outlet adjacent the bottom of said vessel for the removal of treated organic material,

(d) a second inlet adjacent the bottom of said vessel for the introduction of a medium containing oxygen gas,

(e) at least one rotatably screw located in a horizontal plane within the interior of said vessel adjacent the bottom thereof but at a higher level than said second inlet, each said screw being adapted to cut material from the bottom of the organic mass that gravitates downwardly through said vessel and to convey the cut material to said outlet,

(f) a layer of coarse particulate covering said second inlet and extending in a generally first horizontal plane,

(g) means for moving each said rotatable screw back and forth between two non-adjacent side walls of said vessel in a second horizontal plane that is parallel to said first horizontal plane and above it,

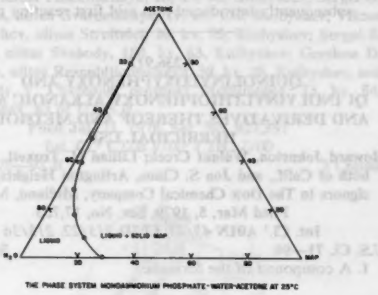
(h) a horizontally extending space between the upper surface of said layer of particulate material and the lower sweep of said at least one rotatable screw, said space communicating with said outlet and which, when the apparatus is in use, is filled with finely divided organic material cut by said at least one screw in the form of a layer, which together with the said layer of coarse particulate material contributes to uniformly distributing the oxygen-gas containing medium over the cross sectional area of the vessel.

4,236,911

PURIFICATION AND CONVERSION OF PHOSPHORIC ACID TO AMMONIUM PHOSPHATES

John F. McCullough; Leslie R. Tate and John F. Phillips Jr. all of, Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Filed Nov. 8, 1979, Ser. No. 92,771
Int. Cl.³ C01B *15/16*
U.S. Cl. 71—34 **10 Claims**



THE PHASE SYSTEM MONOAMMONIUM PHOSPHATE-WATER-ACETONE AT 25°C

1. A process for purifying wet-process phosphoric acid, which process employs the use of acetone and a source of ammonia, and which process comprises the following steps:

(1) introducing into first reacting means streams comprising acetone from later-mentioned filtering means, condensing means, and distillation means, a stream of phosphoric acid and a stream of a source of ammonia to produce a resulting reaction slurry therein;

(2) maintaining a temperature in said first reacting means above 50° C. and maintaining the material therein for a period of time ranging from about 45 minutes to about 120 minutes;

(3) removing at least a portion of said slurry from said first reacting means and introducing same into first filtering means wherein the solids are separated from the liquid in said reaction slurry formed in said first reacting means supra;

(4) recovering said separated solids from said first filtering means and washing same with acetone to effect the removal of the residual mother liquor phosphoric acid adhering to the surfaces thereof;

(5) removing the wash effluent comprising acetone and residual phosphoric acid mother liquor from said first filtering means and introducing same into said first reacting means;

(6) removing the recovered separated solids from said first filtering means and introducing same into drying means, wherefrom is recovered a resulting dried solid fertilizer product and wherefrom is evolved offgases containing residual acetone;

(7) introducing said acetone containing offgases from said first drying means into condensing means to effect the condensation and recovery of said acetone therein and subsequent introduction of said recovered condensed acetone into said first reacting means;

(8) removing the filtrate from said first filtering means and introducing same into a second reacting means together with a stream of ammonia to produce therein a slurry, said ammonia introduced into said second reacting means being so proportioned as to provide therein a mixture of ammonium phosphate having a mole ratio $NH_3:P_2O_5$ of about 2;

(9) removing from said second reacting means at least a portion of the resulting slurry formed therein and introducing same into second filtering means;

(10) recovering the solids of ammonium phosphate from said second filtering means and introducing same into drying

means wherefrom is recovered dried solid ammonium phosphate fertilizer product and an offgas containing residual acetone;

(11) introducing said residual acetone containing offgases into condensing means wherefrom the resulting recovered condensed acetone is introduced into said first reacting means;

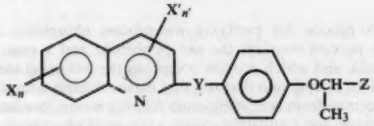
(12) removing the filtrate from said second filtering means and introducing same into distillation means wherefrom is recovered distilled acetone, which distilled acetone is subsequently introduced into said first reacting means.

4,236,912
QUINOLINYLOXYPHENOXY AND QUINOLYINYLTHIOPHENOXY ALKANOIC ACIDS AND DERIVATIVES THEREOF AND METHODS OF HERBICIDAL USE

Howard Johnston, Walnut Creek; Lillian H. Troxell, Antioch, both of Calif., and Jon S. Claus, Arlington Heights, Ill., assignors to The Dow Chemical Company, Midland, Mich.

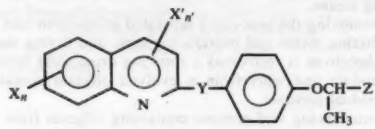
Filed Mar. 5, 1979, Ser. No. 17,753
Int. Cl.³ A01N *43/42*; C07D *215/22, 215/36*
U.S. Cl. 71—94 **34 Claims**

1. A compound of the formula:



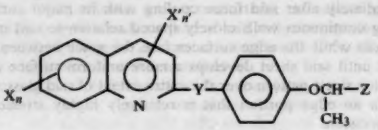
wherein
X and X′ are independently F, Cl, Br, I, CF_3—, CH_3O—, —NO_2, or —$N(R')_2$; with the proviso that both cannot be CF_3—, CH_3O—, —NO_2, or —NR′$_2$;
n is 0, 1 or 2;
n′ is 0 or 1;
Y is O or S;
Z is —CO_2H, —CO_2M, —CO_2R, —COSR, —$CONR'_2$, —$CSNH_2$, —CN, —CH_2OR' or —CH_2O_2CR';
M is Na, K, Mg, Ca or —$N(R'')_4$;
R″ is H, C_1–C_4 alkyl or C_2–C_3 hydroxyalkyl;
each R′ is independently H or C_1–C_4 alkyl; and
R is C_1–C_8 alkyl or C_3–C_6 alkoxyalkyl.

11. A composition comprising an inert agricultural carrier and a herbicidally effective amount in the range of from about 0.003 percent by weight to about 95 percent by weight of a compound having the formula:



wherein
X and X′ are independently F, Cl, Br, I, —CF_3, CH_3O—, —NO_2, or —$N(R')_2$; with the proviso that both cannot be —CF_3, CH_3O—, —NO_2, or —NR′$_2$;
n is 0, 1 or 2;
n′ is 0 or 1;
Y is O or S;
Z is —CO_2H, —CO_2M, —CO_2R, —COSR, —$CONR'_2$, —$CSNH_2$, —CN, —CH_2OR' or —CH_2O_2CR';
M is Na, K, Mg, Ca or —$N(R'')_4$;
R″ is H, C_1–C_4 alkyl or C_2–C_3 hydroxyalkyl;
each R′ is independently H or C_1–C_4 alkyl; and
R is C_1–C_8 alkyl or C_3–C_6 alkoxyalkyl.

21. The method of controlling undesired plant growth which comprises applying to the locus of said plants a herbicidally effective amount in the range of from 0.01 to 20 lbs/acre of a compound having the formula:



wherein
X and X′ are independently F, Cl, Br, I, —CF_3, CH_3O—, —NO_2, or —$N(R')_2$; with the proviso that both cannot be —CF_3, CH_3O—, —NO_2, or —NR′$_2$;
n is 0, 1 or 2;
n′ is 0 or 1;
Y is O or S;
Z is —CO_2H, —CO_2M, —CO_2R, —COSR, —$CONR'_2$, —$CSNH_2$, —CN, —CH_2OR' or —CH_2O_2CR';
M is Na, K, Mg, Ca or —$N(R'')_4$;
R″ is H, C_1–C_4 alkyl or C_2–C_3 hydroxyalkyl;
each R′ is independently H or C_1–C_4 alkyl; and
R is C_1–C_8 alkyl or C_3–C_6 alkoxyalkyl.

4,236,913
GASEOUS ATMOSPHERE FOR ELECTRIC ARC FURNACES

Ivy C. Austin, 34184 Ecorse Rd., Romulus, Mich. 48174

Filed Jun. 11, 1979, Ser. No. 47,347
Int. Cl.³ C21C *5/52*
U.S. Cl. 75—10 R **9 Claims**

1. In a process for the manufacture of steel or copper in an electric arc furnace wherein either molten steel and other iron alloys or copper is refined by the generation of heat produced by an electric arc formed between a plurality of electrodes and the surface of the molten metal, the process being conducted in an inert atmosphere, the improvement which comprises:
refining the molten metal in an inert atmosphere selected from the group consisting of carbon dioxide, argon, a mixture of carbon dioxide and argon, a mixture of nitrogen and carbon dioxide and mixtures thereof.

4,236,914
DESULFURIZATION COMPOSITION FOR MOLTEN PIG IRON

Minoru Kitamura, 20-25 Kitaguchi-cho, Nishinomiya-shi, Hyogo-ken; Tsutomu Hayashi, 1217-95 Kitano, Noguchi-cho; Takeharu Moritsugi, 1261-31 Kitano, Noguchi-cho, both of Kakogawa-shi, Hyogo-ken, and Mitsuyoshi Saruwatari, No. 993, 0aza-Ichino, Oomuta-shi, Fukuoka-ken, all of Japan

Filed Aug. 15, 1979, Ser. No. 66,697
Int. Cl.³ C21C *7/02*
U.S. Cl. 75—58 **5 Claims**

1. A desulfurizing composition which is fed into molten iron with a nitrogen containing inert gas and which comprises 0.3 to 10 wt. % of a carbon source selected from the group consisting of graphite, coke, anthracite, charcoal and carbon black; 1 to 10 wt. % of a magnesium compound calculated as MgO; and calcium carbide as a residual component.

4,236,915
PROCESS FOR OXYGEN SPRINKLE SMELTING OF SULFIDE CONCENTRATES

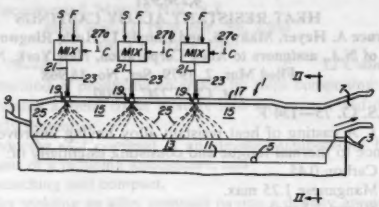
Paul E. Queneau, Cornish, N.H. 03746, and Reinhardt Schuhmann, Jr., 1206 Hayes St., West LaFayette, Ind. 47906

Filed Dec. 21, 1978, Ser. No. 971,995
Int. Cl.³ C22B *15/04*
U.S. Cl. 75—74 **14 Claims**

1. In the method for producing a metal matte from a nonferrous metal-containing sulfide mineral concentrate in a horizon-

tal reverberatory furnace wherein a molten charge of metal matte and a slag are present, beneath an enclosed hot atmosphere, and exhaust gases, metal matte and slag are separately discharged therefrom, the improvement comprising:

sprinkling a mixture of said sulfide concentrate, flux and an oxygen-rich gas into an enclosed hot sulfur dioxiderich atmosphere so as to effect oxidation of the sulfide concen-



trates therein prior to contact of said concentrates with the molten slag; a major portion of said sulfide concentrate, flux and oxygen-rich gas mixture being injected through a plurality of vertically disposed burners on said furnace into said enclosed sulfur dioxide-rich hot atmosphere as a plurality of paraboloidal suspensions, so as to effect substantially uniform heat and mass distribution over a major portion of said horizontal furnace.

4,236,916

METHOD FOR THE CONTINUOUS RECOVERY OF TIN FROM IRON RICH CONCENTRATES

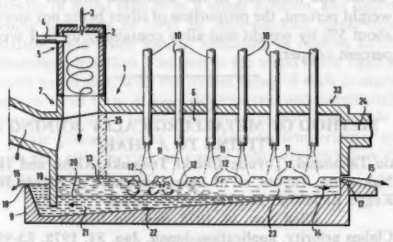
Gerhard Melcher, and Horst Weigel, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Wedag AG, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 952,963

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1977, 2747586

Int. Cl.³ C22B *25/00*

U.S. Cl. 75—85 **16 Claims**



1. A method for the continuous recovery of metallic tin with a low iron content from a complex tin ore having a relatively high iron content comprising:

adding fluxing agents in sufficient amounts to form a silicate type slag with said ore,

smelting the ore and the fluxing agents in an atmosphere ranging from neutral to weakly reducing to form a smelt and said silicate slag,

selectively reducing the smelt to separate out tin in liquid phase at a temperature range and compositional range at which metallic tin separates out without reduction of iron silicates present, and

conveying the tin rich phase and the iron silicate phase in layers in countercurrent contact with each other,

the selective reducing taking place by means of blowing with high speed jets wherein the gas velocity is in the range from Mach 1 and Mach 3.

4,236,917

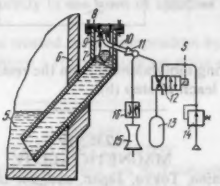
METHOD OF GAS-DYNAMIC STIRRING OF LIQUID MOLTEN METALS AND APPARATUS FOR PERFORMING SAME

Boris S. Dolzhenkov, ulitsa Aerodromnaya, 87, kv. 2; Igor A. Partin, ulitsa Svobody, 230, kv. 164, both of Kuibyshev; Leonid A. Loginov, ulitsa Mariny Raskovoi, 30, kv. 65, Moscow; Genrikh I. Kabakov, ulitsa 1905 goda, 2 proseka, 9, Moskovskaya oblast, Odintsovsky raion, poselok Zhavoronki; Jury N. Lanin, ulitsa Fizkulturnaya, 13, kv. 66, Kuibyshev; Sergei G. Turanin, ulitsa Gvardeiskaya, 19, kv. 134, Kuibyshev; Viktor I. Plokhov, ulitsa Stroitelei, 20, kv. 75, Kuibyshev; Sergei S. Semin, ulitsa Svobody, 184, kv. 63, Kuibyshev; Gershon D. Dymov, ulitsa Respublikansakaya, 59, kv. 26, Kuibyshev, and Gennady V. Cherepok, prospekt Metallurgov, 73, kv. 54, Kuibyshev, all of U.S.S.R.

Filed Jul. 21, 1978, Ser. No. 927,597

Int. Cl.³ C22B *9/00*; C21C *7/00*

U.S. Cl. 75—93 R **3 Claims**



1. In a method of gas-dynamic stirring of molten metals, including alternatingly withdrawing metal portions from the molten metal body into the tube of a pump by suction and expelling these metal portions back into the molten metal body by the action thereupon of compressed-gas pulses, the improvement comprising, directly prior to the supplying of said compressed-gas pulse into the tube of the pump, cutting off the action of the suction, to provide for free descent of the lifted metal portion by gravity forces.

4,236,918

RECOVERY OF ELEMENTAL SULFUR AND METAL VALUES FROM TAILINGS FROM COPPER RECOVERY PROCESSES

Kartik A. Narain, Tucson, Ariz., assignor to Cyprus Metallurgical Processes Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 894,515, Apr. 10, 1978, Pat. No. 4,138,248. This application Jan. 15, 1979, Ser. No. 4,808

The portion of the term of this patent subsequent to Feb. 6, 1995, has been disclaimed.

Int. Cl.³ C22B *15/10, 11/08, 34/34*

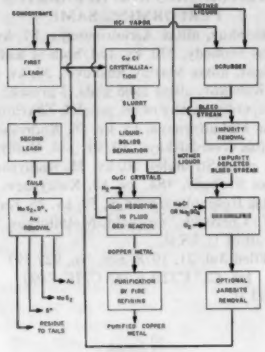
U.S. Cl. 75—101 R **41 Claims**

1. In the process for recovering copper from copper sulfide concentrates in which the concentrate is leached in a main leach circuit to produce a leach solution comprising cuprous chloride, cupric chloride, ferrous chloride and soluble metal impurities, the solution further processed for copper recovery, the improvement by which elemental sulfur, copper and molybdenum in the tailings from the main leach are selectively separated and recovered which sequentially comprise the following:

(a) removing elemental sulfur from the tailings;

(b) recovering copper from the residue from the sulfur solvent leach of step (a) by leaching the sulfur depleted

residue with ferric chloride to selectively solubilize copper; and



(c) recovering molybdenum from the residue from the ferric chloride leach of step (b).

4,236,919

MAGNETIC ALLOY

Kimiyuki Kamino, Tokyo, Japan, assignor to Mitsubishi Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1978, Ser. No. 972,472

Claims priority, application Japan, Jun. 6, 1978, 53/73197

Int. Cl.³ C22C *38/18*

U.S. Cl. 75—126 H **2 Claims**

1. A magnetic alloy of the Fe-Cr-Co type consisting essentially of, by weight, 5 to 30%Co, 15 to 35%Cr, 0.1 to 10%Ti, 0.1 to 10%V, 0.005 to 0.03%C, 0 to 0.1%Al, and the balance being Fe.

4,236,920

STEEL ALLOY

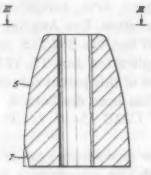
Väino Lampe; Staffan H. Gunnarsson, and Karl-Erik Johansson, all of Hagfors, Sweden, assignors to Uddeholms Aktiebolag, Hagfors, Sweden

Filed Apr. 11, 1979, Ser. No. 29,104

Claims priority, application Sweden, May 2, 1978, 7804997

Int. Cl.³ C22C *39/20*

U.S. Cl. 75—128 A **11 Claims**



1. Steel alloy in particular for parts exposed to heavy stresses and wear by objects of high temperatures, consisting essentially of the following chemical composition in percentage by weight:

C—0.9–3
Si—0.3–2.5
Mn—0.5–4
Cr—15–25
Ni—1.5–8
Mo—0.2–1.8
W—0.5–2.0
V—1.5–4

Balance iron and impurities in normal contents.

4,236,921

HEAT RESISTANT ALLOY CASTINGS

Bruce A. Heyer, Mahwah, and Donald L. Huth, Ringwood, both of N.J., assignors to Abex Corporation, New York, N.Y.

Filed Mar. 2, 1979, Ser. No. 16,968

Int. Cl.³ C22C *19/00*

U.S. Cl. 75—134 F **1 Claim**

1. A casting of heat resistant alloy having improved resistance to thermal fatigue and consisting essentially of:

Carbon 0.45
Manganese 1.25 max.
Silicon 3.5 max.
Chromium 25
Nickel 35
Cobalt 15
Tungsten 4.5
Titanium 0.35
Iron Balance, substantially.

4,236,922

DENTAL ALLOY OF BISMUTH-TIN WITH ADDITIONS OF AG, SB AND CU

Rudy Michl, Schaan, and Peter Dorsch, Vaduz, both of Liechtenstein, assignors to Etablissement Dentaire Ivoclar, Schaan, Liechtenstein

Filed Mar. 16, 1978, Ser. No. 974,658

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712517

Int. Cl.³ C22C *33/00*

U.S. Cl. 75—134 D **24 Claims**

1. A dental alloy consisting essentially of 30 to 74 weight percent bismuth, 19 to 69.9 percent weight and either:

A. Silver in the amount of 0.1 to 5 weight percent;

B. Silver and antimony in the combined amount of 0.1 to 7 weight percent, the proportion of silver being not more than about 5% by weight said alloy containing up to 1 weight 1 percent copper.

4,236,923

METHOD OF METALLURGICALLY JOINING A FITTING TO A SHAFT

Akio Takahashi, Toyota; Chiaki Tsumuki, Aichi, and Hitoshi Nakamura, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 14, 1978, Ser. No. 960,622

Claims priority, application Japan, Jan. 31, 1978, 53-9527

Int. Cl.³ B22F *3/00, 7/08*

U.S. Cl. 75—208 R **14 Claims**

1. A method of joining a shaft to a fitting member comprising, molding a fitting member from wear-resistant iron base sinterable alloy powder which yields a liquid phase and shrinks during sintering; assembling said fitting member to a separately produced shaft; and then sintering the assembly of fitting member and shaft at a temperature to cause the fitting member to shrink and to yield a liquid phase of the fitting member to metallurgically bond the fitting member to the shaft.

8. A method of joining a shaft to a fitting member, comprising forming a wear-resistant iron base sinterable alloy powder product which yields a liquid phase and shrinks in sintering; pre-sintering the product at a temperature not yielding a liquid phase to form a fitting member; assembling the fitting member to a separately produced shaft; and thereafter sintering the assembly of shaft and fitting member at a temperature higher than the liquid phase—yielding point of the fitting member to

cause the member to shrink and to yield a liquid phase to bond the assembly together.

4,236,924

PRODUCTION OF SINGLE PHASE ALLOY PARTS BY REDUCTION OF OXIDES

Murray Robbins, Berkeley Heights, and Annemarie Staudinger, Chatham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 12, 1979, Ser. No. 2,988
Int. Cl.[3] B22F *3/00*
U.S. Cl. 75—211 12 Claims

1. A method of producing an article by steps comprising:
(a) pressing a metal oxide mixture into a compact, and directly thereafter
(b) reducing said compact at an elevated temperature by means of a reducing atmosphere, and
(c) quenching said compact,
thereby yielding an alloy compact having a density greater than 90 percent of maximum alloy density, and comprising less than 5 percent of multiple phases,
THE INVENTION CHARACTERIZED by forming said metal oxide mixture by steps comprising agglomerating a mixture of metal salts from a liquid solution, and decomposing said salts to form an agglomerated metal oxide mixture, each oxide species subsisting as regions having dimensions less than 1 micron in the metal oxide agglomerates so formed, with the oxides being of such composition so as to be reducible to a single phase alloy at the reduction temperature, and with said alloy having an immiscibility region below the reduction temperature.

2. A method of producing an article by steps comprising:
(a) pressing a metal oxide mixture into a compact, and
(b) reducing said compact at an elevated temperature by means of a reducing atmosphere, and
(c) quenching said compact,
thereby yielding an alloy compact having a density greater than 90 percent of maximum alloy density, and comprising less than 5 percent of multiple phases,
THE INVENTION CHARACTERIZED by forming said metal oxide mixture by steps comprising agglomerating a mixture of metal salts from a liquid solution, and decomposing said salts to form an agglomerated metal oxide mixture, each oxide species subsisting as regions having dimensions less than 1 micron in the metal oxide agglomerates so formed, with the oxides being of such composition os as to form a nonstoichiometric and substantially mutually insoluble metal oxide mixture that is reducible to a single phase alloy at the reduction temperature, and with said alloy having an immiscibility region below the reduction temperature.

4,236,925

METHOD OF PRODUCING SINTERED MATERIAL HAVING HIGH DAMPING CAPACITY AND WEARING RESISTANCE AND RESULTANT PRODUCTS

Jin Onuki, Hiktachi; Masateru Suwa, Tokai; Ko Soeno, Hitachi; Akio Okayama, Hitachi; Masatoshi Tsuchiya, Hitachi, and Hisakiti Onodera, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 10, 1978, Ser. No. 932,641
Claims priority, application Japan, Aug. 10, 1977, 52-95115
Int. Cl.[3] B22F *3/00, 5/00*
U.S. Cl. 75—229 7 Claims

1. A method of producing a sintered material comprising the steps of:
mixing a powdery metal selected from the group consisting of lead, graphite and magnesium with a powdery matrix metal selected from the group consisting of iron, copper, aluminum, cast iron and alloys thereof;
compression-molding the powdery metal mixture;
sealing the compression-molded powdery metal mixture within a vessel;
subjecting the vessel and the compression-molded powdery metal sealed therein to plastic treatment so that lead, graphite or magnesium is dispersed uniformly in the form of spindles in the matrix metal; and
sintering the thus treated metal composition by heating to a temperature above a recrystallization point of the matrix metal.

2. A method of producing sintered material comprising the steps of:
mixing 5–30 wt. % of powdery lead with the remainder of a powdery matrix metal selected from the group consisting of iron, copper, aluminum, cast iron and alloys thereof;
compression-molding the powdery metal mixture;
sealing the compression-molded powdery metal mixture within a vessel;
subjecting the vessel and the compression-molded powdery metal sealed therein to plastic treatment so that lead is dispersed uniformly in the form of spindles in the matrix metal; and
sintering the thus treated metal composition by heating to a temperature above a recrystallization point of the matrix metal.

4,236,926

HARD METAL BODY

Leif S. Lindholm, Hägersten, and Jan N. Lindström, Norsborg, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Sep. 28, 1978, Ser. No. 946,652
Claims priority, application Sweden, Sep. 28, 1977, 7710826
Int. Cl.[3] B22F *3/00;* C22C *29/00*
U.S. Cl. 75—238 12 Claims

1. A sintered hard metal body composed of at least one carbide as tungsten carbide and a binder phase consisting essentially of cobalt and/or nickel, the hard metal body being provided with a boronized surface zone having a thickness of 1–100 μm characterized in that the hard metal contains small additions of up to about 5 percent by volume of the hard metal body of cubic carbides as VC, TiC, TaC, Mo_2C, ZrC, NbC and/or Cr_3C_2, the content of binder phase is 6–40% of the volume of the body, and the mean grain size of the tungsten carbide is 0.2–1.5 μm.

10. A process for boronizing the surface of a cemented carbide body, the said body containing at least one carbide as tungsten carbide, from 6 to 40% by volume of the body of a binder phase consisting essentially of cobalt and/or nickel, and small additions of up to about 5 percent by volume of the hard metal body of cubic carbides as VC, TiC, TaC, Mo_2C, ZrC, NbC and/or Cr_3C_2, the mean grain size of the tungsten carbide being 0.2 to 1.5 μm, comprising contacting the said cemented carbide body at a temperature of from about 750° to 1000° C. with a first gaseous mixture of a boron trihalide and a hydrogen halide, to form a thin boronized layer on said body and thereafter increasing the amount of the hydrogen halide to form a second gaseous mixture to complete boronizing of said hard metal body to a thickness of from 1 to 100 μm.

4,236,927

METHOD FOR THE MANUFACTURE OF IRON-CONTAINING SINTERED ELECTRODES

Horst Bühl, Weinstadt, and Manfred Gutjahr, Oberboihingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 25, 1978, Ser. No. 936,929
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1977, 2738456
Int. Cl.[3] B22F *5/00, 3/00, 1/00*
U.S. Cl. 75—246 55 Claims

1. A method for manufacturing iron-containing sintered electrodes for alkaline accumulators, in which iron powder is

sintered with the use of a filler, comprising the steps of intimately mixing with each other the iron powder and at least one reducible iron compound, sintering the powder mixture into a stable body, and reducing the reducible iron compound into highly active iron.

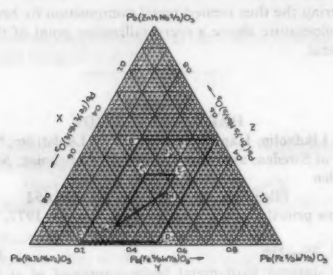
55. An iron containing sintered electrode comprising a stable body formed by intimately mixing iron powder and at least one powdered reducible iron compound, sintering the resulting powder mixture and reducing the iron compound to a highly active iron within said stable body.

4,236,928

CERAMIC COMPOSITIONS

Masatomo Yonezawa; Kazuaki Utsumi, and Tomeji Ohno, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1979, Ser. No. 88,534
Claims priority, application Japan, Oct. 24, 1978, 53-130789
Int. Cl.[3] C04B *35/00;* H01B *3/02*
U.S. Cl. 106—39.5 3 Claims



1. A ceramic composition consisting essentially of $[Pb(Fe_{\frac{1}{2}}Nb_{\frac{1}{2}})O_3]_x$ $[Pb(Fe_{\frac{1}{2}}W_{\frac{1}{2}})O_3]_y$ $[(Pb(Zn_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3]_z$ wherein $x+y+z=1.00$ and the proportions x, y and z fall within the respective ranges of:

$0.02 \leqq x \leqq 0.79$,

$0.20 \leqq y \leqq 0.50$, and

$0.01 \leqq z \leqq 0.48$.

4,236,929

RAPID STRENGTH DEVELOPMENT IN COMPACTING GLASS BATCH MATERIALS

Stanley A. Byers; James R. McKee, Sr., and Marvin C. Gridley, all of Muncie, Ind., assignors to Ball Corporation, Munci, Ind.

Filed Jun. 15, 1979, Ser. No. 49,026
Int. Cl.[3] C03C *3/04*
U.S. Cl. 106—52 16 Claims

1. A method of forming discrete bodies of glass batch materials having high crush strength within about 10 minutes or less after their formation which comprises forming a mixture of glass batch materials including sand, admixing an alkali metal salt therewith, said salt being a member selected from the group consisting of sodium carbonate, potassium carbonate, and sodium sulfate, adding between about 4 to about 10 weight percent water to moisten and hydrate the alkali metal salt, compacting the moistened batch materials to form distinct units, and subjecting said units after their compaction to ambient cooling air currents at a rate sufficient to contact substantially all the distinct units.

15. A hard, freshly formed, compact unit of glass batch material made by the process of forming a mixture of glass batch materials, admixing an alkali metal salt therewith, adding sufficient water to hydrate the alkali metal salt, compacting the hydrated batch material to form a distinct, compact unit, and subjecting said unit after its formation to ambient cooling air currents to contact substantially all said unit.

4,236,930

OPTICAL WAVEGUIDE AND METHOD AND COMPOSITIONS FOR PRODUCING SAME

Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20034, and Theodore A. Litovitz, 904 Devere Dr., Silver Spring, Md. 20903

Division of Ser. No. 635,728, Nov. 26, 1975, Pat. No. 4,110,093, which is a continuation-in-part of Ser. No. 559,512, Mar. 18, 1975, abandoned, and Ser. No. 462,481, Apr. 22, 1974, Pat. No. 3,938,974. This application Jun. 19, 1978, Ser. No. 917,100
Int. Cl.[3] C03C *3/08, 13/00, 15/00*
U.S. Cl. 106—54 22 Claims

1. A glass article having a least dimension of 4 millimeters and having a composition consisting essentially of the following components on a mole percent bases:

48–64%	SiO_2
28–42%	B_2O_3
4–9%	R_2O

said composition having the following parameters: ρ0.2–0.8 where ρ is defined as the ratio A_2O/R_2O for A_2O and R_2O in mole percent, A_2O is the sum of the concentrations in mole percent of K_2O, Rb_2O and Cs_2O, and R_2O is the sum of the concentrations in mole percent of Na_2O, K_2O, Rb_2O, and Cs_2O, said composition exhibiting an equilibrium volume fraction of about 50% at a temperature within the range of 500° to 575° C. whereby said article withstands conventional acid leaching without cracking.

4,236,931

GAS-PERMEABLE REFRACTORY PARTS

Jean-Pierre Kiehl, Lyon; Jean-Pierre Remi, Bron, and Jacques R. P. Schoennahl, Libos, Fumel, all of France, assignors to Societe Europeenne des Produits Refractaires, Neuilly-sur-Seine, France

Filed Jun. 12, 1979, Ser. No. 47,823
Claims priority, application France, Jun. 26, 1978, 78 19001
Int. Cl.[3] C04B *35/02, 21/12*
U.S. Cl. 106—64 5 Claims

1. Gas-permeable parts having a permeability of from 50 to 600 Nanoperms and retaining a high mechanical strength when heated between their hydraulic setting temperature and their ceramization temperature, which parts are comprised by weight of:

(A) 60 to 90% of granules of a grain size from 5 mm to 0.2 mm formed from a material selected among the group consisting of a chamotte containing at least 42% of Al_2O_3, mullite, fired gibbsite containing more than 90% Al_2O_3, sintered or fused cast corundum containing more than 95% Al_2O_3, natural chromite, sintered MgO, zircon sand and stabilized zirconia, bonded by

(B) 10 to 40% of a cement or binder consisting by weight of:

(a) 10 to 30% of a calcium aluminate,

(b) 14 to 54% of a constituent having a particle size comprised between 100 A and 0.1 micron and selected from a material selected among the group consisting of silica, alumina and chromic oxide Cr_2O_3, and

(c) 14 to 54% of alumina having a particle size comprised between 1 and 100 microns.

4,236,932

METHOD AND APPARATUS FOR PRODUCING A HYDRAULIC BINDER

Horst Herchenbach, Troisdorf, Fed. Rep. of Germany, and Bartl Lechner, Kufstein, Austria, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 4, 1979, Ser. No. 27,035

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815161

Int. Cl.³ C04B 7/44

U.S. Cl. 106—100 11 Claims

1. A method for the production of a hydraulic binder of the type used for plaster and masonry mortar in a cement producing installation wherein raw material is processed sequentially through a preheating zone and a heated clinker calcining zone having a raw material inlet and discharging heated exhaust gases into said preheating zone, which comprises:

removing a predetermined portion of the material being processed from at least one point between the preheating zone and the clinker calcining zone while the material has a predetermined condition of activation at a temperature of at least 450° C.

4,236,933

PROCESS FOR PHTHALOCYANINE GREEN PIGMENT

Salvatore F. Torre, South Plainfield, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 10, 1979, Ser. No. 74,182

Int. Cl.³ C08K 5/34

U.S. Cl. 106—288 Q 8 Claims

1. A green shade copper phthalocyanine pigment composition comprising a green copper phthalocyanine pigment having at least 15 halogen atoms per molecule, about 5 to 10% by weight, based on the weight of the pigment, of a non-pigmentary water soluble blue sulfonated copper phthalocyanine dye wherein the sulfonated dye contains at least about 1.8 sulfonic acid groups per molecule, and at least a complexing amount of an N-alkyltrimethylammonium chloride, wherein the alkyl group contains about 8 to 18 carbon atoms, to complex the sulfonic acid groups of the dye.

7. A process for the preparation of a green shade copper phthalocyanine pigment composition which comprises: (1) forming a dispersion of a green copper phthalocyanine pigment containing at least 15 halogen atoms per molecule in water; (2) adding thereto about 5 to 10 percent by weight, based on the dry weight of said green pigment, of a water soluble blue sulfonated copper phthalocyanine dye wherein the sulfonated dye contains at least about 1.8 sulfonic acid groups per molecule and at least a complexing amount of an N-alkyltrimethylammonium chloride compound, wherein the alkyl group contains about 8 to 18 carbon atoms, and sufficient sulfuric acid to render the pH below about 4; (3) heating said mixture at a temperature of about 90–95° C for a time sufficient for compelxation of said sulfonated copper phthalocyanine dye with said N-alkyltrimethylammonium chloride; and (4) isolating said green pigment composition from said mixture.

4,236,934

NONLEAFING ALUMINUM FLAKE PIGMENTS

Harry E. Bell, East Brunswick, N.J., assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Feb. 28, 1979, Ser. No. 16,707

Int. Cl.³ B02C 15/00; C09C 1/62

U.S. Cl. 106—290 20 Claims

1. In a process for producing a substantially nonleafing aluminum flake by milling particulate aluminum to flake form in the presence of a milling agent, the improvement which comprises using a milling agent comprising isostearic acid.

12. A substantially nonleafing aluminum flake pigment comprising aluminum flake particles having a surface layer comprising an isostearic acid milling agent residue.

4,236,935

METHOD FOR REMOVING ORGANIC ACID SOIL FROM SURFACES

Daniel Schoenholz, Basking Ridge; Arthur W. Petersen, Chatham Township, Morris County, and Marcus A. Northup, Jr., Morristown, all of N.J., assignors to Church & Dwight Co., Inc., Piscataway, N.J.

Division of Ser. No. 679,333, Apr. 22, 1976, Pat. No. 4,193,886. This application Sep. 28, 1979, Ser. No. 80,053

Int. Cl.³ B08B 3/10

U.S. Cl. 134—2 8 Claims

1. A method for the removal of soil containing free or combined organic acids from surfaces comprising applying to soil containing free or combined organic acids an effective amount of a composition comprising (A) at least one polyhydric alcohol or a lower aliphatic ether or ester thereof having at least 2 free hydroxy groups, (B) 1.0 to 500% by weight of at least one alkali metal bicarbonate based on the weight of the polyhydric alcohol and (C) 5.0 to 1000% by weight of at least one alkali metal salt of a weak organic acid based on the weight of the polyhydric alcohol, heating the composition to a temperature of 250° to 550° F. and removing the soil residue.

4,236,936

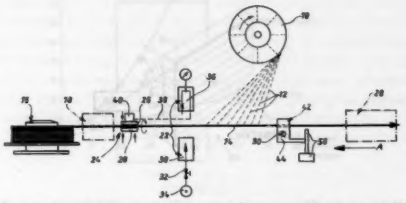
METHOD FOR CLEANING ARTICLES BY SPRAYING

Ernst Schuh, Lugstr. 26, 7120 Bietigheim-Bissingen, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,485

Int. Cl.³ B08B 3/02

U.S. Cl. 134—7 12 Claims



1. A method of spraying surfaces of articles which travel through a spray zone of spraying apparatus for cleaning said surfaces, the method comprising measuring the surface temperature of the articles, produced by the impact energy of the particles of the spray medium, after passage of the articles through the spray zone, and thereafter, in accordance with the temperature measured, displacing the articles in the spray zone in a direction transverse to their direction of travel until they have substantially the maximum surface temperature attainable.

4,236,937

SOLAR COLLECTOR DEVICE

Manfred G. Wihl, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

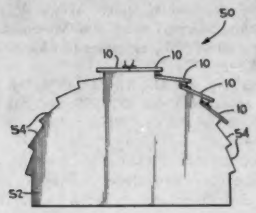
Filed May 24, 1978, Ser. No. 908,959

Int. Cl.² H01L 31/04

U.S. Cl. 136—246 6 Claims

1. A solar collector device which includes a substrate and at least one photovoltiac cell mounted on said substrate, said substrate comprising an elongated base member having a generally semi-circular cross-section and including a multiplicity of separate generally planar elongated platform areas formed in the curved periphery thereof so as to form doubly descending columns with adjacent areas of each column being in differ-

ent planes, each said photovoltaic cell mounted on said substrate being mounted on one of said platform areas, and each



said photovoltaic cell being of such a size as to tangentially extend beyond the platform area upon which it is mounted.

4,236,938

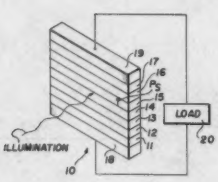
EFFICIENT HIGH VOLTAGE PHOTOVOLTAIC CELLS

Philip S. Brody, Brookmont, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 784,761, Apr. 15, 1977, Pat. No. 4,160,927, which is a division of Ser. No. 533,365, Dec. 16, 1974, Pat. No. 4,051,465, which is a continuation-in-part of Ser. No. 411,853, Nov. 1, 1973, Pat. No. 3,855,004. This application Jul. 25, 1979, Ser. No. 60,525

Int. Cl.³ H01L *31/00*

U.S. Cl. 136—254 **11 Claims**



1. A high efficiency photovoltaic cell comprised of a plurality of single crystal laminar ferroelectric material layers stacked between two electrodes, each said layer having two opposing faces and said layers being stacked with respective faces of adjacent layers facing each other, each said layer being remanently polarized in the same direction perpendicular to said faces, said layers being exposed to incident light whereby said light is converted to electrical energy by said photovoltaic cell.

4,236,939

SEMI-FINISHED STEEL ARTICLE AND METHOD FOR PRODUCING SAME

Debanshu Bhattacharya, Matteson, Ill.; Dennis T. Quinto, St. John, and Michael O. Holowaty, Crown Point, both of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Jan. 24, 1979, Ser. No. 5,965

Int. Cl.³ C22C *38/60*

U.S. Cl. 148—2 **6 Claims**

1. A method for producing a free-machining, elongated, semi-finished, tellurium-containing steel shape with substantially reduced surface cracking due to lead telluride, said method comprising the steps of:

providing a bath of molten steel having a composition consisting essentially of, in wt.%:

carbon	0.06–1.
manganese	0.30–1.6
sulfur	up to 0.35
bismuth	0.10–0.40
tellurium	machinability increasing amounts up to 0.06
lead	up to 0.15
silicon	up to 0.30
phosphorous	up to 0.12
iron	essentially the balance;

casting said molten steel into an elongated solid shape;

the combined lead plus bismuth content being at least 0.25 wt.%,

said steel being provided with sufficient manganese and bismuth so that, in said solid shape, said tellurium is combined substantially with said manganese and/or said bismuth as micro-inclusions of MnTe and/or Bi_2Te_3 and said bismuth is also present as microinclusions of elemental bismuth, there being substantially no FeTe present in said solid shape;

heating said elongated steel shape to a hot deforming temperature, without burning the steel shape;

and hot deforming said elongated shape while the latter is at a temperature above about 920° C. (1700° F.) and below 1150° C. (2100° F.), without surface removal between said heating step and said hot deforming step, to produce an elongated, deformed, semi-finished steel shape having a surface substantially free of surface cracking prior to any surface conditioning thereof;

said steel, in said solid shape, being devoid of microinclusions of lead telluride in amounts sufficient to produce substantial surface cracking during said hot deforming step at a temperature below 1150° C. (2100° F.).

4,236,940

WEAR RESISTANT TITANIUM ALLOY COATING

Brian A. Manty, Lake Park; Herbert R. Liss, Stuart, and Henry Lada, Lake Park, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 884,294, Mar. 6, 1978, abandoned. This application Jun. 12, 1979, Ser. No. 47,666

Int. Cl.³ C23B *5/52*

U.S. Cl. 148—6.2 **5 Claims**

1. The method of providing a wear and corrosion resistant coating on a titanium alloy substrate, comprising:

exposing clean substrate;

applying as a first layer an acid chromate solution to the clean substrate to form a chromium conversion coating thereon;

depositing as a second layer a chromium base coating on the chromium conversion coated substrate; and

heat treating the coated substrate at about 700°–820° (1300°–1500° F.) for 1–300 hours to metallurgically bond the coatings and substrate, without completely interdiffusing said second layer chromium base coating into the substrate, to preserve the wear resisting properties of the second layer surface.

4,236,941

METHOD OF PRODUCING HEAT TREATMENT ATMOSPHERE

Ray F. Main, Jr., Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 836,580, Sep. 26, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,240

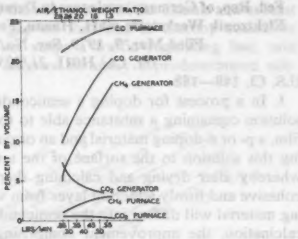
Int. Cl.³ C21D *1/34*

U.S. Cl. 148—16.5 **4 Claims**

1. A method of producing a gaseous composition suitable for use as an atmosphere in heat treating metals, said composition being produced by a partial oxidation reaction between air and ethanol, said method comprising

reacting a gaseous mixture consisting essentially of air and

ethanol, the weight ratio of air to ethanol being between 1.0 and 3.0, said mixture being heated at a temperature between 1400° F. and 1850° F. in a bed of particles providing a surface conducive to said reaction, said reaction being for a period of time to form a substantially soot-free gaseous product containing substantially no oxygen and comprising hydrogen, carbon monoxide, carbon dioxide, methane, and water, said product containing at least 5 percent by volume methane and at least 3 percent by volume carbon dioxide,



cooling the product gas to a temperature below 100° F. to minimize soot formation, and removing any water that condenses and

introducing said product gas into a furnace containing metal to be treated and maintained at a temperature at which metal is suitably heat treated, whereby said product gas undergoes further reaction within said furnace that lowers the methane and carbon dioxide concentrations to produce a nonoxidizing atmosphere suitable for heat treating said metal.

4,236,942

METHOD FOR THE GASEOUS NITRIDING OF FERROUS-BASED COMPONENTS

Frederick V. Rudd, Blackburn, England, and Tom Bracewell, deceased, late of Blackpool, England (by Bertha Bracewell, administratrix), assignors to British Leyland UK Limited, London, England

Filed May 23, 1978, Ser. No. 908,892

Claims priority, application United Kingdom, May 31, 1977, 23011/77

Int. Cl.[3] C23C *9/14*

U.S. Cl. 148—16.6 **9 Claims**

1. A method of nitriding a ferrous-base alloy component which comprises subjecting the heated component, which has previously been subjected when heated to an atmosphere of ammonia, whereby a nitrided case layer and an iron nitride skin was produced, to an atmosphere of gas inert to the component at the temperature of the component in the inert gas, the temperature of the component in the inert gas lying between 450° C. and 600° C. and the component being subjected to the inert gas for at least twenty hours, whereby the iron nitride skin is at least partly removed without destroying the nitrided case layer.

8. A method of nitriding a ferrous-base alloy component which comprises subjecting the component to an atmosphere of ammonia while the component is at a temperature between 450° C. and 600° C. to produce a nitrided case layer and an iron nitride skin on the component, and then subjecting the component to an atmosphere of gas inert to the component at the temperature of the component in the inert gas, the temperature of the component in the inert gas lying between 450° C. and 600° C. and the component being subjected to the inert gas for at least twenty hours, whereby the iron nitride skin is at least partly removed without destroying the nitrided case layer.

4,236,943

PRECIPITATION HARDENABLE IRON-NICKEL-CHROMIUM ALLOY HAVING GOOD SWELLING RESISTANCE AND LOW NEUTRON ABSORBENCE

Michael K. Korenko, Richland, Wash.; Howard F. Merrick, Suffern, N.Y., and Robert C. Gibson, Ringwood, N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 22, 1978, Ser. No. 917,832

Int. Cl.[2] C22C *19/05*

U.S. Cl. 148—32.5 **7 Claims**

1. An iron-nickel-chromium age-hardenable alloy characterized in having a compact morphology of the gamma-double prime phase enveloping the gamma-prime phase and consisting essentially of about 40 to 50% nickel, 7.5 to 14% chromium, 1.5 to 4% niobium, 0.25 to 0.75% silicon, 1 to 3% titanium, 0.1 to 0.5% aluminum, 0.02 to 0.1% carbon, 0.002 to 0.015% boron and the balance iron.

4,236,944

CAST IRON ESPECIALLY SUITED FOR INGOT MOLDS

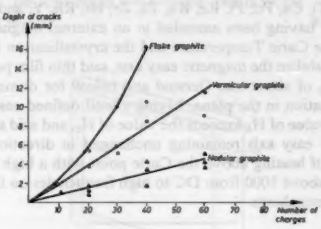
Melih Yaman; Kjell Gustavsson, and Örjan Hammer, all of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Oct. 18, 1978, Ser. No. 952,400

Claims priority, application Sweden, Oct. 24, 1977, 7711918

Int. Cl.[3] C22C *37/04*

U.S. Cl. 148—35 **3 Claims**



1. An ingot mold formed of a cast iron consisting essentially of 3.7 to 4.0% C, not more than 1.6% Si, 0.40 t 0.80% Mn, 0.010 to 0.045% P, not more than 0.010% S, 0.020 to 0.050% Mg, the balance Fe with normally appearing impurities, the said elements being adjusted to provide a specific carbon equivalent in the range 3.2 to 3.6% calculated as C_{eqv}=% C+0.65% Si+0.35% P−35% Mg, the ingot mold structure containing an amount of not more than 5% of volume of carbide, an amount not more than 25% of volume of ferrite, at least $\frac{2}{3}$ of total graphite volume of spheroidal graphite and the balance pearlite.

4,236,945

PHOSPHORUS-IRON POWDER AND METHOD OF PRODUCING SOFT MAGNETIC MATERIAL THEREFROM

Orville W. Reen, New Kensington, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Nov. 27, 1978, Ser. No. 963,717

Int. Cl.[3] H01F *1/02*

U.S. Cl. 148—105 **4 Claims**

1. A phosphorus-iron powder for use in the pressing and sintering, at less than 2% linear shrinkage, of soft magnetic parts while retaining the magnetic properties of the parts, comprising a substantially phosphorus free powder containing at least 98% iron blended with a sufficient quantity of ferrophosphorus powder having an average particle size of at least 10 micron and a phosphorus content of from 18 to 30%, to arrive at a phosphorus content for the mixture in the range of

from about 0.40 to 1.25% and less than 0.01% carbon or copper impurities in the mixture.

3. In a process for producing a phosphorus bearing soft magnetic material while retaining the magnetic properties of the parts, which process includes the steps of: blending powder containing at least 98% iron with ferrophosphorus powder having a phosphorus content of from 18 to 30%, into a mixture containing from about 0.40 to 1.25% phosphorus and less than 0.01% carbon or copper impurities, pressing the blended mixture to a green density of at least 6.0 grams per cubic centimeter, and sintering the mixture in a nonoxidizing atmosphere at a temperature of at least 1900° F., wherein the improvement comprises the step of blending ferrophosphorus powder having an average particle size in excess of 10 micron, whereby part linear shrinkage during sintering is less than 2%.

4,236,946

AMORPHOUS MAGNETIC THIN FILMS WITH HIGHLY STABLE EASY AXIS

Joseph A. Aboaf, Peekskill; Jerome J. Cuomo, Lincolndale; Amitava Gangulee, Croton-on-Hudson, and Robert J. Kobliska, Mount Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 13, 1978, Ser. No. 886,020

Int. Cl.³ C21D *1/04*

U.S. Cl. 148—108 **45 Claims**

1. A sputtered thin film of noncrystalline amorphous magnetic material consisting of Fe, B and from zero to ten percent of a transition metal selected from the group consisting of Cr, Mo, V, Ti, Cu, Pd, Pt, Re, Ru, Ta, Zr, Hf, Rh, Y, and Al, said thin film having been annealed in an external magnetic field below the Curie Temperature and the crystallization temperature to stabilize the magnetic easy axis, said thin film possessing a low H_c of about one Qersted and below for domains with magnetization in the plane, having a well defined easy axis in that the value of H_k exceeds the value of H_c, and said stabilized magnetic easy axis remaining unchanged in direction in the absence of heating above the Curie point with a high permeability of above 1000 from DC to high frequencies on the order of 1000 megahertz.

4,236,947

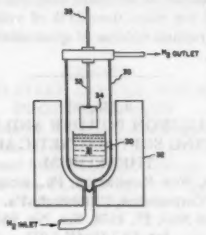
FABRICATION OF GROWN-IN P-N JUNCTIONS USING LIQUID PHASE EPITAXIAL GROWTH OF SILICON

Bantval J. Baliga, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 21, 1979, Ser. No. 40,643

Int. Cl.³ H01L *21/208*

U.S. Cl. 148—171 **8 Claims**



1. A method of forming a high quality p-n junction in silicon epitaxially-grown on a substrate, with a graded p-type region situated between said junction and said substrate, said method comprising:

maintaining at silicon epitaxial growth temperature a tin melt saturated with silicon containing n-type dopant atoms;

heating a silicon substrate wafer of p-type conductivity to a temperature above the growth temperature;

immersing the substrate wafer heated above the growth temperature into the melt heated to the growth temperature; and

reducing the melt temperature at a controlled rate to induce epitaxial growth of silicon on the substrate wafer.

4,236,948

PROCESS FOR DOPING SEMICONDUCTOR CRYSTALS

Klaus Seibold, Hanau, and Gunther Schlamp, Steinbach, both of Fed. Rep. of Germany, assignors to Demetron Gesellschaft fur Elektronik Werkstoffe mbH, Hanau, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 18,881

Int. Cl.³ H01L *21/225*

U.S. Cl. 148—188 **18 Claims**

1. In a process for doping a semiconductor crystal with a solution containing a substance able to form a silicon dioxide film, a p- or n-doping material and an organic solvent by applying this solution to the surface of the semiconductor crystal whereby after drying and calcining there will be formed a cohesive and firmly adhering layer from which layer the doping material will diffuse into the semiconductor crystal during calcination, the improvement comprising employing as the component forming the silicon dioxide layer an acidified solution having a pH 2 to 6 of partially hydrolyzed alkyl polysilicate, aryl polysilicate or mixed alkyl aryl polysilicate.

4,236,949

PROCESS FOR PREPARING A HERMETICALLY SEALED ASSEMBLY

David A. Horsma, Palo Alto, and Stephen H. Diaz, Los Altos, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

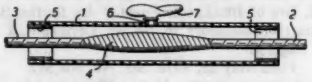
Continuation of Ser. No. 717,696, Aug. 25, 1976, abandoned.

This application Sep. 25, 1978, Ser. No. 945,427

Claims priority, application United Kingdom, Aug. 27, 1975, 35338/75

Int. Cl.² H02G *15/08*

U.S. Cl. 156—49 **49 Claims**



1. A process for preparing an assembly comprising a substrate and a covering which is hermetically sealed around the substrate which process comprises the steps of:

placing a dimensionally recoverable covering member having at least one open end about the substrate which is sought to be hermetically sealed;

causing said dimensionally recoverable covering member to recover and to seal hermetically about the substrate;

detecting increased air pressure in the interior of the assembly between the covering member and substrate at a point which is remote from said open end by the employment of a detection device which communicates with said point whereby the formation of the hermetic seal is signalled by said detection device.

4,236,950

ROAD MARKING MACHINE AND METHOD

Ludwig Eigenmann, Vacallo, Canton Ticino, Switzerland

Filed Oct. 26, 1977, Ser. No. 845,834

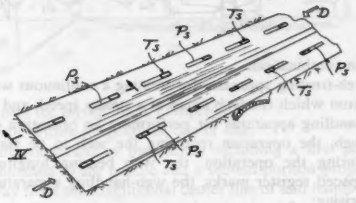
Claims priority, application Italy, Oct. 27, 1976, 28747 A/76

Int. Cl.² E01F *9/08*; E01C *23/16*; B32B *31/24*; B05C *5/00*

U.S. Cl. 156—71 **14 Claims**

1. A road marking machine, particularly for forming a traffic regulating line, comprising a chassis movable along a road to

be marked; first applying means on said chassis operative for applying a plurality of first separate strips onto a road to be marked, so that when said chassis moves along the road the first strips applied onto the road follow one after another, said first applying means being adapted to so apply said first separate strips to the road that each two adjacent first strips applied to the road are spaced one from each other along the movement of the chassis so as to constitute therebetween an elongated gap on the road; and second applying means on said chassis adapted for applying at least one second strip different from said first strips in said gap between said two adjacent first strips so that said second strip is aligned with said first strip along the direction of the movement of the chassis and at least partially covers said gap on the road to thereby constitute together with said first strips a traffic regulating line, said second means being adapted to spray a predetermined substance of said second strip onto the road and into the gap between said first strips.



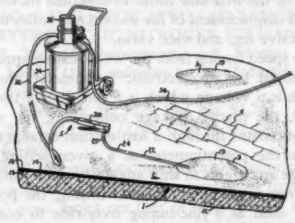
11. A method of marking a road, particularly with a traffic regulating line, comprising the steps of applying to a road to be marked a first sequence of first strips following one after another, so that each two adjacent first strips are in alignment with and spaced from each other by an elongated gap; and applying directly to the road a second sequence of second strips different from said first strips and following one after another, so that at least one second strip is applied to the road into said elongated gap between said two adjacent first strips to be aligned with said first strips along the direction which the machine takes along the road and to at least partially cover said gap and to thereby constitute together with said first strips a traffic regulating line, said step of applying said second strip constituting the step of spraying a substance of the second strip onto the road in the gap between said two adjacent first strips.

4,236,951

METHOD OF TREATING BLISTERS IN ASPHALTIC MEMBRANE COVERED ROOFS

Ludwig C. Krchma, 1168 E. 66th St., Kansas City, Mo. 64113, and Paul L. Morris, 8815 W. 104th St., Overland Park, Kans. 66212

Filed Dec. 27, 1977, Ser. No. 864,852
Int. Cl.³ B32B *35/00*; B05D *3/12, 1/26*
U.S. Cl. 156—71 **3 Claims**



1. A method of healing blisters in a multi-ply asphaltic membrane covered roof having a top coat and roofing felt ply therebeneath with the blister voids extending beneath the roofing felt ply, and inhibiting the further formation of such blisters therein, said method including the step of:

(a) applying over the entire membrane area containing said blisters a quantity of liquid petroleum hydrocarbon at a rate to total approximately 4 to 5 ounces by weight per square foot of surface area of membrane treated, said hydrocarbon having no more than 4.0% normal heptane insoluble compounds, a viscosity from 25 SSu to 400 SSU at 210° F., a minimum viscosity-gravity constant of 0.92, a specific gravity of 60/60 exceeding 0.95, an initial flash point (Cleveland Open Cup) approximately over 250° F., and a maximum saturate constituent limit of 35%; said hydrocarbon being miscible with asphaltic components of said membrane to penetrate same;

(b) applying said hydrocarbon at ambient air temperatures above about 60° F., and

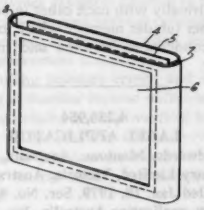
(c) maintaining said hydrocarbon on said membrane area to penetrate said top coat and roofing felt, whereby the rate of healing proceeds more quickly than the rate of separation.

4,236,952

PRODUCTION OF SHEET MATERIALS

Janusz J. H. Krause, and Colin Stanier, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 1, 1978, Ser. No. 965,393
Claims priority, application United Kingdom, Dec. 29, 1977, 54141/77
Int. Cl.² B32B *7/08, 31/16*; D05B *93/02*
U.S. Cl. 156—93 **12 Claims**



1. A method of joining together a sheet or sheets of an organic polymer which polymer is not normally melt-processable, the method comprising the steps of

(a) contacting a strip of melt-processable organic polymer with the faces of the sheet or sheets in the region of juxtaposed edges of the sheet or sheets,

(b) stitching the strip to the sheet or sheets by means of a thread in the region of both of the juxtaposed edges of the sheet or sheets, and

(c) heating the strip in order to fuse the strip and/or the thread to seal the holes created by the stitching step, and, where the strip has not previously been fused to the faces of the sheet or sheets, in order to fuse the strip to the faces of the sheet or sheets.

4,236,953

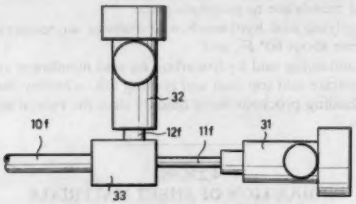
PROCESS FOR PRODUCING THERMOPLASTIC MULTI-WALLED PIPES

Keiichi Takahashi, Ichikawa, Japan, assignor to Tokan Kogyo Co., Ltd, Tokyo, Japan

Division of Ser. No. 800,427, May 25, 1977, Pat. No. 4,157,194. This application Nov. 21, 1978, Ser. No. 962,781
Claims priority, application Japan, May 27, 1976, 51/67004; Jun. 6, 1976, 51/71575; Jul. 1, 1976, 51/77054; Jul. 1, 1976, 51/77055; Jul. 6, 1976, 51/79518; Feb. 18, 1977, 52/16117
Int. Cl.² B29D *23/04*; F16L *39/00, 47/02*
U.S. Cl. 156—244.13 **8 Claims**

1. A process for producing joinable thermoplastic multi-

walled pipes each of said thermoplastic multi-walled pipes having at least two tubular members different in inside diameter and arranged concentrically with a hollow portion therebetween, a plurality of longitudinally extending ribs spacing adjacent ones of said tubular members, and the bond per unit area being weaker at the portion where the rib contacts the inner tubular member than at the portion where the rib contacts the outer tubular member, said process comprising the steps of extruding molten thermoplastic resin from a first extruder provided with a die similar in cross section to an innermost tubular member thereby obtaining a first formed product having a cross section of said innermost tubular member; thereafter separately extruding molten thermoplastic resin over said innermost tubular member from a second extruder longitudinally spaced from said first extruder in the direction of extrusion of the first formed product provided with a die similar in cross section to the combined form of outer one of said tubular members and ribs of said multi-walled pipe thereby obtaining a second formed product having a cross section of the combined form of said outer tubular member and ribs of the multi-walled pipe; and joining the second formed product to the first formed product concentrically with each other in bonds between said ribs and said inner tubular member which are weaker per unit area than the connections between said ribs and said outer tubular member.

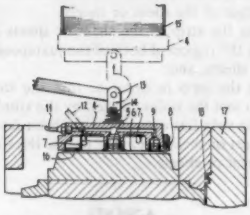


4,236,954

LABEL APPLICATOR

Frederick H. Edwards, Mentone, Australia, assignor to Vinyl Clad Proprietary Limited, Victoria, Australia

Filed Jan. 18, 1979, Ser. No. 4,590
Claims priority, application Australia, Jan. 19, 1978, PD 3071
Int. Cl.³ C05G *15/00*
U.S. Cl. 156—352 **9 Claims**



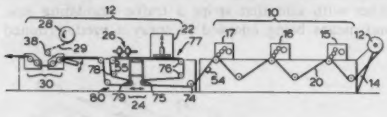
1. In a label applicator having a label pickup member operable to receive a label from a supply thereof and transfer such label to another member, means for holding such label on said pickup member during its transfer, and means for releasing such label from said pickup member upon completion of such transfer, the improvement comprising sensing means carried by said pickup member for sensing the presence on said pickup member of a label, said sensing means being so positioned on said pickup member with reference to the size and shape of such label as to be exposed to and engageable with said another member should such label occupy any position in said pickup member other than a predetermined position.

4,236,955

PRINTING AND DIE-CUTTING APPARATUS

Allan R. Prittie, 12 Blackdown Crescent, Islington, Ontario, Canada

Filed Oct. 31, 1977, Ser. No. 847,241
Claims priority, application Canada, Oct. 29, 1976, 264629
Int. Cl.³ B26D *5/34*; B32B *31/18*
U.S. Cl. 156—353 **5 Claims**



1. In combination:

a web-treating apparatus for treating a continuous web, and from which the web issues at a steady speed, and a web-handling apparatus for performing an operation on said web, the operation requiring the web to be stationary during the operation, the web bearing longitudinally spaced register marks, the web-handling apparatus comprising:

first means for carrying out said operation,

second means for positively and periodically advancing the web past said first means when the latter is not acting upon the web, including at least one drive roller positively engaging the web, and control means for positively rotating and braking said at least one drive roller,

sensing means mounted adjacent to where the register marks on the web pass, the sensing means being selectively adjustable in the direction of web movement and including an upstream sensor which upon detecting a register mark signals said control means to begin to slow down from its normal web-advance speed, and a downstream sensor which upon detecting a register mark signals said control means to stop the movement of the web, whereby the stopped position of the web with respect to said first means can be adjusted by adjusting the position of said downstream sensor,

the web from the web-treating apparatus moving along a path which includes a first leg passing by said first means and in which said operation can be carried out, a second leg upstream of said first leg, said second leg being looped around a first end roller that is displaceable to lengthen and shorten said second leg, a third leg downstream of said first leg, said third leg being looped around a second end roller that is displaceable to lengthen and shorten said third leg,

said first and second end rollers being linked together by a swingable, pivoted linkage in such a way that displacement of the first end roller to lengthen its respective leg entails displacement of the second end roller to shorten its respective leg, and vice versa,

the web speed issuing from the web-treating apparatus being monitored by an electronic tachometer, the output of which is a voltage which is a function of the input web speed, the pivotal linkage controlling the setting of a potentiometer through a lost-motion arrangement which leaves the potentiometer at a given setting unless the linkage arc begins to shift angularly, such shifting causing a change in the potentiometer setting, the potentiometer being used as a fine-tuning over-ride to control means governing the average web speed along the first leg of the web path in such a way that any wandering of the linkage arc will cause a shift of the potentiometer setting which will change the speed of said last-mentioned means to

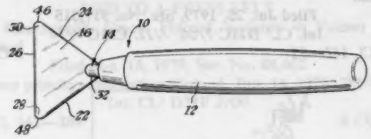
bring the linkage arc back in the other direction, said control means being responsive to said voltage.

4,236,956

FLOOR LAYING TOOL

Donald A. Harrison, P.O. Box 3214, Tequesta, and Howard A. Lanier, 1002 Hawie St., Jupiter, both of Fla. 33458

Filed Dec. 11, 1978, Ser. No. 968,078
Int. Cl.³ B44C *7/06*
U.S. Cl. 156—527 **3 Claims**



2. A tool for laying vinyl, comprising:

a handle with a longitudinal center line,

a shaft connected to the handle including a first portion connected to the handle and a second portion projecting away from the longitudinal center line of said handle, said second portion having a distal end spaced from the longitudinal center line of said handle,

a flat, generally triangular-shaped plate connected to said distal end of said second portion of said shaft, said triangular-shaped plate having at least two rounded corners, said plate having a forward distal straight edge transversely positioned with respect to the longitudinal centerline of said handle,

said straight edge having a rounded corner of said triangular-shaped plate at each end,

said triangular-shaped plate having a third corner, said triangular-shaped plate connected to said distal end of said second portion of said shaft adjacent said third corner,

said two rounded corners having dull edges to crease the vinyl flooring into corners between a baseboard and a subflooring without cutting the vinyl flooring,

said straight edge having a sharp cutting edge, said triangular-shaped plate having a lower flat surface area for pressing of the vinyl against the subfloor, and

said triangular-shaped plate positioned at an angle to said handle with the phantom extension of said longitudinal center line of said handle and the plane of the plate intersecting.

4,236,957

DISSOLUTION OF METALS UTILIZING AN AQUEOUS H_2SO_4—H_2O_2-MERCAPTO CONTAINING HETEROCYCLIC NITROGEN ETCHANT

Silvester P. Valayil, Youngstown, and Moenes L. Elias, Canfield, both of Ohio, assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Jun. 25, 1979, Ser. No. 51,762
Int. Cl.³ C09K *13/06*; C23F *1/00, 3/02*
U.S. Cl. 156—666 **21 Claims**

1. A method of metal dissolution which comprises contacting a metal with an aqueous solution containing from about 0.2 to about 4.5 gram moles per liter of sulfuric acid, from about 0.25 to about 8 gram moles per liter of hydrogen peroxide and a catalytically effective amount of a heterocyclic nitrogen compound additive containing at least one free mercapto group substitution.

4,236,958

APPARATUS FOR ELIMINATING RESIDUAL SOLVENT FROM CRUMBLED POLYMER

Nison I. Gelperin, 2 Obydensky pereulok, 10, kv. 5; Leonid M. Polotsky, Leninsky prospekt, 64, kv. 170, both of Moscow, and Nikolai A. Konovalenko, ulitsa Lenina, 27/40, kv. 46, Efremov Tulskoi oblasti, all of U.S.S.R.

Filed May 8, 1979, Ser. No. 37,017
Int. Cl.³ B01D *1/14*
U.S. Cl. 159—16 S **3 Claims**

1. In apparatus for eliminating residual solvent from crumbled polymer comprising: a vertical column; a plurality of substantially horizontal perforated contact trays vertically arranged with respect to each other within said column and dividing the latter into a corresponding plurality of intercommunicating compartments through which an aqueous suspension along with polymer crumb is adapted to pass; and means for feeding live steam into said vertical column for interacting with the polymer crumb as the latter passes through said compartments, the improvement comprising:

means for producing polymer crumb and aqueous suspension including a chamber located within an upper portion of said vertical column and an overflow baffle defining at least one side of the chamber located vertically over the uppermost one of said contact trays;

a water supply nozzle fluidly communicating with said chamber; and

a conventional injector-type crumb former fluidly communicating with said chamber.

4,236,959

METHOD OF PRODUCING FIBER PULP BY GRINDING FIBROUS MATERIAL IN A STEAM ENVIRONMENT

Rolf B. Reinhall, Killingevagen 16, Lidingo, Sweden

Continuation of Ser. No. 739,432, Nov. 8, 1976, abandoned, which is a continuation of Ser. No. 561,250, Mar. 24, 1975, abandoned, which is a continuation of Ser. No. 500,369, Aug. 26, 1974, abandoned, which is a continuation of Ser. No. 316,290, Dec. 18, 1972, abandoned. This application Aug. 21, 1978, Ser. No. 935,744

Claims priority, application Sweden, Dec. 20, 1971, 16359/71

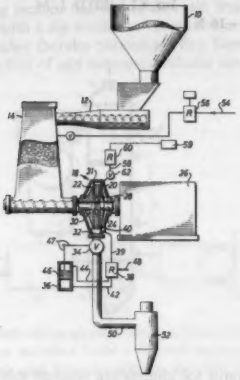
The portion of the term of this patent subsequent to Nov. 12, 1991, has been disclaimed.

Int. Cl.² D21B *1/14*
U.S. Cl. 162—23 **3 Claims**

1. In the method of producing fiber pulp from moisture-containing fibrous vegetable material wherein the fibrous material is introduced in a steam environment of predetermined superatmospheric pressure and corresponding temperature into a central portion of a grinding interspace defined between a pair of facially opposed grinding discs which rotate relative to one another within a surrounding closed casing to propel the mixture of pressurized steam and ground material radially outwards within the interspace and into the surrounding casing from which the ground material and residual steam is removed

under a controlled rate of discharge in response to fluctuations in a predetermined discharge pressure within the casing, the improvement in said method resulting in increased heat economy and improved pulp quality, comprising:

contacting the mixture of steam and ground material upon its emergence from said interspace with a noncondensable gas, other than the steam, of lower pressure than said



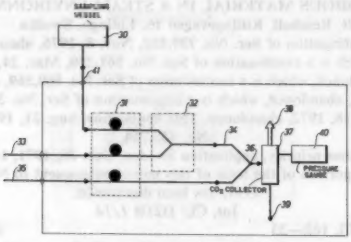
steam environment to reduce the partial pressure of the steam while maintaining the predetermined total pressure within the casing with consequent expansion of the steam to cause it to become momentarily superheated and unsaturated, thereby exerting a cooling effect on the ground material by evaporation of moisture and thereby minimizing hydrolysis of the pulp material.

4,236,960

PROCESS FOR CONTROLLING THE DEGREE OF CAUSTICIZATION IN THE PREPARATION OF WHITE LIQUID FROM THE CHEMICALS RECOVERED FROM BLACK LIQUOR

Bengt G. Hultman, and Erik A. Berglund, both of Domsjo, Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Jun. 27, 1979, Ser. No. 52,523
Claims priority, application Sweden, Jul. 18, 1978, 7807910
Int. Cl.[3] D21C *11/04*
U.S. Cl. 162—30 K **13 Claims**



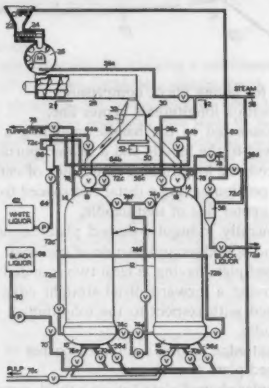
1. A process for controlling the degree of causticization of white liquor in its preparation from green liquor by the addition of calcium oxide, which comprises determining the sodium carbonate concentration of green liquor fed to the causticization; determining the sodium carbonate concentration of white liquor resulting from the causticization; and controlling the degree of causticization within a predetermined range according to both sodium carbonate concentrations so as to maintain the degree of causticization of the white liquor within the range despite variations in sodium carbonate concentration of the green liquor and variations in calcium oxide content of the calcium oxide added for causticization, said determining steps including acidifying samples of the green and white liquors and measuring the amount of carbon dioxide liberated upon the acidification to thereby determine the sodium carbonate concentration of the green and white liquors as carbonate ion concentration.

4,236,961

PULPING LIGNOCELLULOSE IN CONTINUOUS PRESSURIZED BATCH DIGESTERS

Frank B. Green, 10835 SW. Muirwood Dr., Portland, Oreg. 97225

Filed Jul. 25, 1979, Ser. No. 917,015
Int. Cl.[3] D21C *7/06, 7/12;* C21C *7/14*
U.S. Cl. 162—52 **3 Claims**



1. The process for the batch production of cellulosic pulps by the chemical digestion of pieces of lignocellulose which comprises:

(a) providing a pressurizeable batch reaction vessel defining a vertical path along which the lignocellulose progresses from top to bottom,

(b) pressurizing the vessel with steam to substantially the predetermined digestion pressure and temperature,

(c) while maintaining the vessel at substantially digestion pressure and temperature charging the vessel with flows of presteamed lignocellulose pieces and both hot fresh and hot spent digestion liquors for a predetermined charging period,

(d) the fresh liquor flow containing digestion chemicals in the predetermined amount being charged to the vessel at a substantially constant rate commensurate with the rate of charging the lignocellulose pieces,

(e) the spent liquor flow being charged to the vessel at a variable rate sufficient to maintain during the charging period a substantially constant rate of liquor rise within the vessel and to keep the lignocellulose pieces substantially submerged in the liquor, thereby compensating for variations in water extraneously introduced into the digester from steam condensation and lignocellulose water content,

(f) digesting the lignocellulose in the vessel for the predetermined digestion period at the digestion pressure and temperature,

(g) when the lignocellulose in the lower part of the digester has been digested for said digestion period, continuously withdrawing the resulting pulp from the bottom of the vessel over a withdrawing period substantially equal to the vessel-charging period, thereby insuring subjection of the top and bottom portions of the lignocellulose charge

to equal durations of pulping treatment within the vessel, and

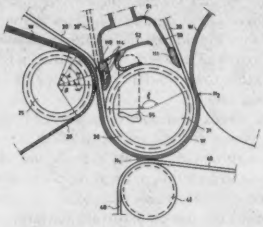
(h) while withdrawing the pulp from the vessel, diffusing cold spent digestion liquor from a stock thereof into a plurality of vertically and radially spaced diffusion zones in the bottom of the vessel at a diffusion rate predetermined to pass the displacement liquor radially through the zones during a time interval substantially equal to the time required for vertical travel of the pulp through the vertical zones.

4,236,962

METHOD AND APPARATUS FOR SEPARATING A WEB FROM A FORMER WIRE AND TRANSFERRING THE WEB TO A PRESS FELT

Matti Kankaanpää, Espoo, Finland, assignor to Valmet Oy, Finland

Filed Jun. 14, 1979, Ser. No. 48,602
Claims priority, application Finland, Jun. 16, 1978, 781934
Int. Cl.³ D21F 2/00
U.S. Cl. 162—204 **9 Claims**



1. A method for separating a web from a former wire of a former section of a paper making machine and transferring the same to a transfer felt which also functions as a press felt, comprising the steps of:

guiding the web carrying former wire over a first sector of a reverser roll so that the web is subjected to a centrifugal force over the first sector which tends to separate the web from the former wire;

guiding the transfer felt so that a surface thereof engages the web over at least a portion of the first sector of the reverser roll such that the transfer felt changes direction over a substantial angle while in contact with the web as the same travels on the reverser roll;

applying external suction to the web through the transfer felt over at least a portion of said first sector of the reverser roll for creating a pressure differential across the web to subject the same to a force acting in substantially the same direction as the centrifugal force, said suction being applied to the web by a vacuum device located in the area of the reverser roll, said device being provided with sealing strips which sealingly engage the surface of the transfer felt which does not engage the web;

whereby the web separates from the former wire at a point on the first sector of the reverser roll and is transferred and adheres to the transfer felt;

guiding the transfer felt around a sector of a grooved press roll substantially immediately after the web is transferred from the wire to the felt under the combined action of the centrifual and suction forces acting thereon; and

subjecting the grooved press roll to external suction in a manner such that the suction is applied through the grooves of the press roll to the web.

9. A method of separating a web from a former wire of a former section of a paper making machine and transferring the same to a transfer felt which preferably comprises a press felt, comprising the steps of:

guiding the web carrying former wire over a first sector of a reverser roll wherein the direction of travel of the web carrying wire substantially changes so that the web while being carried by the wire over said first sector is subjected to a centrifugal force over the first sector which tends to separate the web from the former wire;

guiding the transfer felt so that a surface thereof engages the web over at least a portion of the first sector of the reverser roll such that the transfer felt changes direction over a substantial angle while in contact with the web as the same travels on the reverser roll and wherein upon guiding the transfer felt into engagement with the web, a sandwich structure comprising the former wire, the web and the transfer felt is formed, the sandwich structure extending over a second sector of said reverser roll contained within said first sector thereof;

pressing the transfer felt against the web over a third sector of the reverser roll by means of a shoe device;

applying external suction to the web through the transfer felt over said third sector of the reverser roll through openings formed in the shoe device, for creating a pressure differential across the web to subject the same to a force acting in substantially the same direction as the centrifugal force, said shoe device being provided with sealing strips which sealingly engage the surface of the transfer felt which does not engage the web;

whereby the web separates from the former wire at a point on the first sector of the reverser roll and is transferred and adheres to the transfer felt;

guiding the web carrying transfer felt subsequent to the point of separation of the web from the wire to a first press nip defined by a suction press roll and a grooved roll, the latter operating within its own press felt so that water is removed from the web at the first press nip towards both the suction and grooved rolls; and

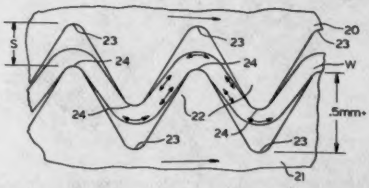
guiding the web transfer felt on the suction roll surface from the first press nip to a second press nip defined by the suction press roll and a smooth-surfaced roll, the web being continuously subjected to suction during such travel by the suction press roll and water being removed from the web at the second press nip towards the suction roll; the web then separating from the transfer felt and adhering to and traveling over the surface of the smooth-surfaced roll whereupon it is removed therefrom for further treatment.

4,236,963

APPARATUS FOR TEXTURING UNTEXTURED DRY TISSUE WEB

Leroy H. Busker, Rockton, Ill., assignor to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 800,737, May 26, 1977, abandoned. This application Nov. 21, 1978, Ser. No. 962,634
The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.
Int. Cl.³ D21F 7/00
U.S. Cl. 162—271 **9 Claims**



1. In combination with a continuous strip of low bulk about 85% to 97% dry originally untextured tissue sheet web of about 0.115 mm thickness formed from a water slurry of tissue quality cellulose fibers hydrogen bonded by drying of the web

to said about 85% to 97% dry condition, apparatus for texturing said tissue sheet web into bulky, soft sanitary tissue:

said apparatus comprising cooperating grooved rotary texturing rolls each of which has generally radially projecting texturing ribs separated by grooves, the ribs on each of the rolls being the same and there being from 4 to 30 equally spaced ribs per centimeter measured across said ribs, each of said ribs having a line contact crest;

said rolls being oriented in nip relation with the texturing ribs and grooves of each roll partially interdigitated with the ribs and grooves of the other of said rolls;

said dry tissue sheet web under tension running longitudinally through the rib and groove nip of said rolls at a substantially common linear speed with rotation of said rolls;

said partially interdigitated ribs of each roll being spaced apart from the ribs of the other roll a distance greater than the thickness of said dry tissue sheet web, so that there is complete freedom from any squeezing of said web between any surface of the ribs;

said rib crests being oriented by their spaced interdigitated relation, so that they thrust a limited distance into the opposite faces of the tensioned running dry tissue sheet web and effect just enough progressive limited wave-stretch deformation of the dry tissue sheet web areas engaged by and thrust by the rib crests in successive opposite directions out of the original plane of the tensioned web to cause mechanical breaking of the hydrogen bond of and partial loosening of fibers at both faces of the dry tissue sheet web, resulting in fluffy surface texture on the dry tissue sheet web and imparting desired tissue bulk and softness to the web while retaining satisfactory web integrity, and elasticity and breaking length characteristics in the textured web;

and said rib crests separating in the rotation of said rolls after said limited wave-stretch deformation of the web by said crests so that said textured dry tissue sheet web is released from said crests and said web areas permitted to return elastically toward said original plane of the web.

4,236,964

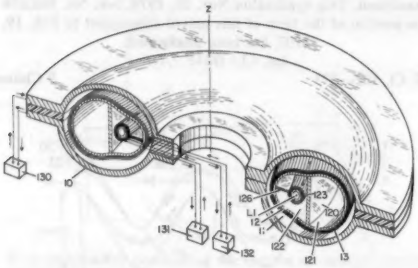
CONFINEMENT OF HIGH TEMPERATURE PLASMAS

Robert W. Bass, Provo; Helaman R. P. Ferguson, Orem, both of Utah; Harvey J. Fletcher, Coltsneck, N.J.; John H. Gardner, Provo, Utah; B. Kent Harrison, Provo, Utah, and Kenneth M. Larsen, Provo, Utah, assignors to Brigham Young University, Provo, Utah

Continuation-in-part of Ser. No. 300,781, Oct. 25, 1972, abandoned. This application Oct. 18, 1974, Ser. No. 515,859

Int. Cl.[2] G21B *1/00*

U.S. Cl. 176—3 **10 Claims**



1. Apparatus for confining a high temperature plasma which comprises

envelope means shaped to form a toroidal hollow chamber containing a plasma comprising a selected gas at a predetermined small fraction of atmospheric density and at a predetermined elevated temperature, and

magnetic field lines generating means for confining, within said chamber, said plasma in a smooth toroidal shape without cusps having a non-convex poloidal cross-section by a smooth magnetic surface comprising a set of magnetic field lines tangent to the surface of said plasma, in which said set of magnetic field lines is characterized by having no field line of zero strength at any point, by having a selected finite even non-zero number N and not more than N closed toroidal axially symmetric magnetic field lines, and by having a zero rotational transform angle, said magnetic field line generating means including

first current means to effect a poloidal flow of current transversely around and exteriorly of said plasma, in order to tend to displace said magnetic field lines inwardly toward the longitudinal axis of said plasma and thereby compress said plasma about its longitudinal axis, as well as to curve said magnetic field lines about the toroidal axis of said plasma,

second current means to effect a toroidal flow of current longitudinally of said plasma and exteriorly thereof adjacent the side of said plasma having a relatively small radius in comparison to the diametrically opposite large radius side of said plasma, thereby to further curve selected ones of said magnetic field lines at a selected region on the surface of said plasma in a direction away from said toroidal axis and toward the longitudinal axis of said plasma so that the poloidal cross-section of said plasma is non-convex, and

third current means positioned exteriorly of both said plasma and said second current means to effect toroidal flow of current longitudinally of said plasma and in a direction opposite to the direction of the flow of current effected by said second current means, thereby to prevent movement of said plasma in a direction toward the large radius side of said plasma, and where the values of the currents in said first, second and third current means are selected so that said plasma is bounded by only a single such smooth magnetic surface having static structural stability, said smooth magnetic surface being the product of the interaction of two separate and distinct families of magnetic surfaces produced by said currents in said first, second and third current means.

4,236,965

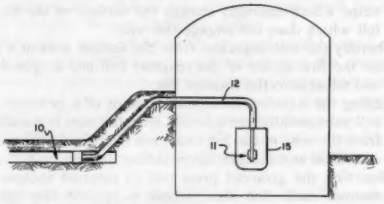
TARGET ASSEMBLY

Richard A. Lewis, Falls Church, Va., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 8, 1978, Ser. No. 958,863

Int. Cl.[3] G21G *1/10*

U.S. Cl. 176—11 **6 Claims**



1. A target assembly capable of producing neutrons when bombarded with a high power, high current proton beam comprising a plurality of pins composed of a neutron emissive target material, the pins being disposed so that their axes parallel the beam path and being distributed axially in a plurality of layers containing an equal number of pins, the pins in each layer being offset from the pins in all other layers, the number

and size of the pins being such that the entire cross sectional area of the proton beam is covered by the pins.

4,236,966

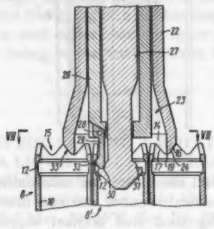
NUCLEAR REACTOR

Nikolai I. Savin, ulitsa Zvezdinka, 3, kv. 71; Dmitry A. Khramov, ulitsa Kultury, 3, kv. 425; Vladimir J. Filippov, ulitsa Piskunova, 32, kv. 14, and Valery V. Bugrov, ulitsa Kirova, 22, kv. 57, all of Gorky, U.S.S.R.

Filed Oct. 7, 1977, Ser. No. 840,396

Int. Cl.[3] G21C *19/20*; B66C *17/08, 1/10*

U.S. Cl. 176—30 **1 Claim**



1. An improved nuclear reactor of the type having

a vessel;

a coolant filling said vessel;

a core accommodated in said vessel;

a plurality of fuel assemblies accommodated in said core, wherein said fuel assemblies are intended to be handled and transferred and have a longitudinal axis; the improvement

wherein the heads of said fuel assemblies are formed, each having an internal hollow, said heads being shaped as prisms comprising faces and edges, said faces having end faces;

a refuelling device intended to transfer said fuel assemblies, mounted on said vessel, said refuelling device comprising a tubular guide member having a circular cross-section mounted on said vessel, said tubular guide member having a tapered end face shaped as a truncated cone having a vertex facing toward said head of said fuel assembly to be handled, a gripping means arranged in said guide member and having an end face, a working member secured on said end face of said gripping means, a drive mechanically coupled to said gripping means and said guide member to set them in motion;

said end faces of said heads of said fuel assemblies being provided with a plurality of cutouts each having first sides and second sides, the number of said plurality of cutouts being equal to the number of fuel assemblies adjacent to said fuel assembly to be handled and defining an equal number of upraised teeth, said cutouts being arranged symmetrically with respect to said edges of said faces of said heads and the apices of said teeth being located at the edges of said heads;

the sides of said cutouts facing said fuel assembly being handled in each one of said fuel assemblies adjacent to said fuel assembly being handled, all forming parts of the surface of a second truncated cone coaxial with the longitudinal axis of the fuel assembly being handled; and the vertex of said second truncated cone facing away from the head of the fuel assembly being handled, wherein prior to the handling and transferring operation the diameter of the lower circular edge of said first truncated cone of said guide member is greater than the diameter of an imaginary circle which is formed by the intersection of said sides of said cutouts facing said fuel assembly being handled, whereby the fuel assemblies adjacent to the one being handled are moved aside by cooperation of said first and second truncated cones and are held in position and prevented from vertical displacement.

4,236,967

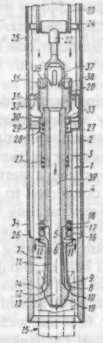
GRIPPING MEANS FOR FUEL ASSEMBLIES OF NUCLEAR REACTOR

Vladimir I. Batjukov, ulitsa Prygunova, 9, kv. 29; Oleg N. Vjugov, ulitsa Novaya, 24, kv. 2; Alexandr I. Fadeev, ulitsa Engelsa, 21, kv. 46, and Tsolak G. Shkhian, naberezhnaya Zhdanova, 6, kv. 16, all of Gorky, U.S.S.R.

Filed Jan. 3, 1978, Ser. No. 866,711

Int. Cl.[2] G21C *19/20*; B66C *17/08, 1/10*

U.S. Cl. 176—30 **1 Claim**



1. Apparatus for gripping fuel assemblies of a nuclear reactor, which fuel assemblies include heads and internal grooves provided in said heads, said apparatus having a longitudinal axis and comprising:

a cylindrical tube;

a gripping means having a longitudinal axis, accommodated in said tube, and longitudinally movable therein, said gripping means comprising,

a housing;

a slider accommodated in said housing and movable relative to said housing;

longitudinal slots provided in the body of said slider and having first end faces, the first end faces of said longitudinal slots being slanted with respect to said longitudinal axis;

gripping jaws having tails on one end and teeth on the other end of each of said gripping jaws;

said tails being pivotably mounted on said housing; and

moving means for moving said gripping means relative to said tube between a first position wherein said gripping means is accommodated within said tube, and a second position wherein a portion of said gripping means, including said gripping jaws, are positioned outside of said tube, along the longitudinal axis of said tube;

means for moving said slider relative to said housing when said gripping means is at said second position, thereby pivoting said gripping jaws between a position wherein said teeth of said gripping jaws are accommodated within said longitudinal slots of said slider, and a position wherein said gripping jaws open so that said teeth are receivable in said internal groove of said fuel assembly head.

4,236,968

DEVICE FOR REMOVING HEAT OF DECOMPOSITION IN A STEAM POWER PLANT HEATED BY NUCLEAR ENERGY

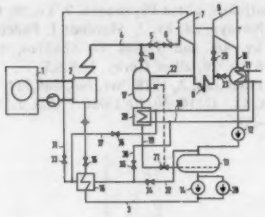
Ekke Werker, Langensendelbach, and Werner Emsperger, Erlangen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Jan. 3, 1978, Ser. No. 866,235

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1977, 2700168

Int. Cl.[2] G21C *9/00*

U.S. Cl. 176—38 2 Claims



1. Device for removing heat of decomposition in a steam power plant heated by nuclear energy and having a steam generator with a water-steam separating tank connected downstream of the steam generator in travel direction of the steam generated thereby comprising a start-up circulatory loop for the steam power plant connected to the steam generator and including the water-steam separating tank therein, said start-up circulatory loop being formed of a feedwater line and an outlet line from the water-steam separating tank and further including an externally cooled heat exchanger connected therein for removing after-heat, said heat exchanger being a preheater for the steam generator connected in said feedwater line upstream of said steam generator, first line means for delivering turbine exhaust steam to said heat exchanger, second line means for delivering steam condensate thereto, first and second valve means, respectively, connected in said first and second line means, respective coolant connecting lines connected to said first and second line means between said valve means, respectively, and said heat exchanger, and additional value means respectively connected in said connecting lines for selectively connecting said heat exchanger to a coolant source.

4,236,969

SYSTEM FOR COOLING SET OF FUEL ASSEMBLIES ARRANGED IN REACTOR VESSEL

Alexandr G. Ljubivy, prospekt Gagarina, 200, kv. 172; Vladimir I. Batjukov, ulitsa Prygunova, 9, kv. 29; Tsolak G. Shkhian, naberezanaya Zhdanova, 6, kv. 16, and Alexandr I. Fadeev, ulitsa Engelsa, 21, kv. 46, all of Gorky, U.S.S.R.

Continuation of Ser. No. 790,975, Apr. 26, 1977, abandoned. This application Nov. 2, 1978, Ser. No. 957,025

Int. Cl.[2] G21C *15/00*

U.S. Cl. 176—61 1 Claim

1. A system for cooling a set of fuel assemblies of a nuclear reactor, comprising:

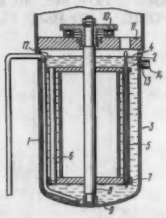
a vessel containing the set of fuel assemblies;

a pipeline for supplying coolant to the lower part of said vessel so that the coolant fills the vessel to a first predetermined level above the active portion of the fuel assemblies;

a hollow cylindrical member extending vertically upward from a central portion of the bottom of said vessel to a height above said first predetermined level, a first part of the interior of said cylindrical member being in communication with a first portion of the interior of said vessel located above said first predetermined level, and a second part of the interior being in communication with a second portion of the interior of said vessel located near the bottom of said vessel;

a first portion of said pipeline extending inside said hollow cylindrical member and having an end located at a second predetermined level located between the active portion of the fuel assemblies and the first predetermined level;

a second portion of said pipeline being positioned outside said vessel and extending to a level below the active portion of the fuel assemblies, the relationship between said hollow cylindrical member and said first portion of said pipeline being such that coolant supplied said vessel through said pipeline enters said hollow cylindrical member from the end of said first portion of said pipeline and leaves said hollow cylindrical member through said second part in communication with the second portion of the interior of said vessel.



4,236,970

STRUCTURAL UNIT FORMED OF A COOLANT PUMP AND A STEAM GENERATOR, ESPECIALLY FOR NUCLEAR REACTOR PLANTS SECURED AGAINST RUPTURE

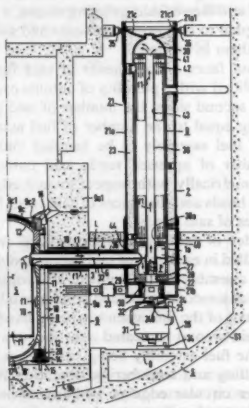
Elmar Harand, Höchstadt, and Eberhard Michel, Nuremberg, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Feb. 14, 1978, Ser. No. 877,741

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1977, 2706164

Int. Cl.[2] G21C *13/02*

U.S. Cl. 176—87 13 Claims



1. In combination, a coolant pump and a steam generator formed together into a structural unit, the steam generator being a straight-tube steam generator having a central ascending pipe, a tube bundle having a central passageway through

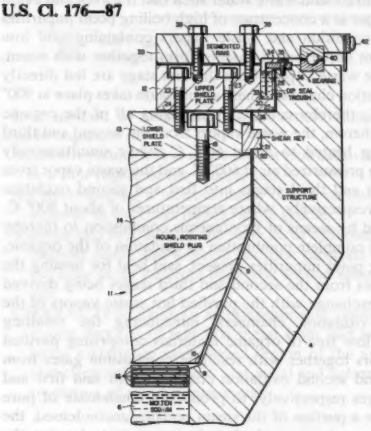
which said ascending pipe extends, an upper primary-side inlet chamber communicating with said tube bundle at an upper end thereof, a lower primary chamber communicating with said tube bundle at a lower end thereof, said central ascending pipe communicating with said inlet chamber for feeding primary medium thereto from which the primary medium flows back through said tube bundle to said lower primary chamber, said ascending pipe having an axial elongation, the coolant pump having an impeller and a guidance device surrounding said impeller, said ascending pipe-elongation having a construction corresponding to that of said guidance device, partition means for dividing said lower primary chamber into a suction space and an outlet chamber space, said pump having a suction side connected through said suction space of said lower primary chamber to a hot line string of a double line connected to the steam generator, said outlet chamber space of said lower primary chamber being connected to a cold line string of said double line.

4,236,971

APPARATUS FOR SEALING A ROTATABLE SHIELD PLUG IN A LIQUID METAL NUCLEAR REACTOR

Robert K. Winkleblack, San Jose, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Mar. 10, 1978, Ser. No. 885,439
Int. Cl.[2] G21C *13/06*
U.S. Cl. 176—87 **11 Claims**



1. An apparatus for sealing a rotatable shield plug in a liquid metal nuclear reactor, comprising:

(a) a rotatable shield plug assembly having a dip-ring seal, said seal providing a fluid/solid barrier between the liquid metal in the reactor and the atmosphere;

(b) a static seal for the rotatable shield plug assembly, said static seal being located between the dip-ring seal and the liquid metal in the reactor;

(c) a bearing attached to and supporting the plug for rotation with respect to a wall of the reactor;

(d) a lifting ring assembly overlying the shield plug assembly and the bearing, said lifting ring assembly being supported for rotation by the bearing; and

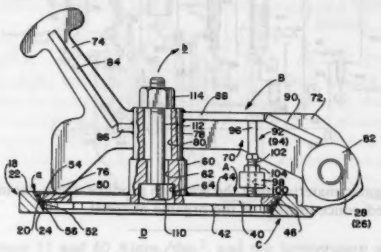
(e) a plurality of bolts engaging the ring assembly and the shield plug in a first position and in a second position, in the first position said bolts disengage the static seal and transfer the weight of the shield plug assembly onto the bearing for rotation of the shield plug with respect to the wall of the reactor and in the second position said bolts transfer the weight of the shield plug back to the reactor wall for operation at power and cause engagement of the static seal, thereby isolating the dip-ring seal from the liquid metal.

4,236,972

FABRICATED OPENING COVER AND COVER ASSEMBLY

Patsie C. Campana, 2614 Sherwood Dr., Lorain, Ohio 44053

Filed Oct. 23, 1978, Ser. No. 953,431
Int. Cl.[3] C10B *25/16, 25/20, 25/14*
U.S. Cl. 202—242 **9 Claims**



1. In combination with a coke oven, a fabricated cover for selectively sealingly covering an opening communicating with the coke oven; wherein said opening includes a rim area disposed therearound, said rim area defining an opening peripheral surface including an opening beveled surface tapering inwardly from the outermost end toward the innermost end thereof, said cover comprising:

a cover body fabricated from mild steel plate to include generally opposed inner and outer faces, said cover having a cover peripheral surface, an annular thin sealing edge rigidly mounted on said cover so as to extend outwardly therefrom in a direction away from said cover body inner face peripherally therearound adjacent said cover peripheral surface; said cover peripheral surface including a secondary sealing portion spaced from said sealing edge and located outwardly therefrom between said sealing edge and said outer face of said cover body; and when said cover is positioned for closing the coke oven opening, said sealing edge engaging the beveled surface around the opening to support said cover and to form a primary seal, said secondary sealing portion being spaced from said sealing edge outwardly thereof and toward said cover body outer face and positioned in closely spaced parallel relationship to the adjacent portion of the opening peripheral surface to provide an annular channel forming a secondary seal so that tar, pitch, residue and other by-products of a coking operation in said coke oven which may by-pass said primary seal accumulate in said annular channel to form a secondary seal for said cover.

4,236,973

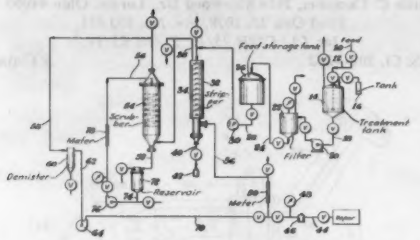
METHOD OF REMOVING CONTAMINANTS FROM WATER

Lanny A. Robbins, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 910,175, May 30, 1978, abandoned. This application May 14, 1979, Ser. No. 39,073
Int. Cl.[3] C02B *1/04*
U.S. Cl. 203—10 **42 Claims**

1. A process for removing at least one organic material selected from the group consisting essentially of chlorinated phenols, phthalate esters, phosphate esters, phosphorothioate esters, chlorinated benzenes, chlorinated biphenyls, polynuclear aromatics, nitrobenzenes, alkyl nitrobenzenes, chloroalkenes, chlorocycloalkenes and chloro-ethers from water contaminated therewith, said organic material having a normal boiling point in excess of 200° C. and a relative volatility with respect to water of at least about one; said process comprising passing a current of vapor, sufficient to vaporize at least a

portion of said organic material, through a moving stream of said contaminated water; and then separating vapor containing



the organic material from the water to produce water having a reduced concentration of the organic material.

4,236,974

PROCESS AND APPARATUS FOR PURIFYING WASTE WATERS

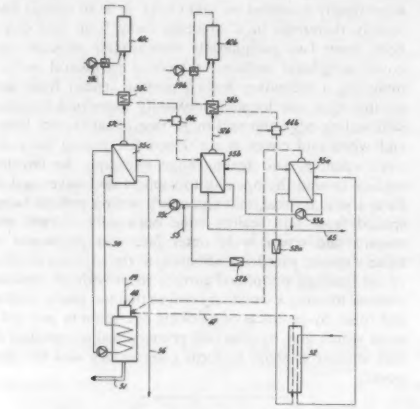
Hans Kühnlein, Füllinsdorf, Switzerland, assignor to Hch. Bertrams Aktiengesellschaft, Basel, Switzerland

Continuation of Ser. No. 804,746, Jun. 8, 1977, abandoned. This application Feb. 22, 1979, Ser. No. 14,167

Claims priority, application Switzerland, Jun. 18, 1876, 7806/76

Int. Cl.[3] **B01D** *3/00;* **C02F** *1/04*

U.S. Cl. 203—11 **4 Claims**



1. An apparatus for purifying waste water contaminated with high- and low-boiling point organic impurities which comprises a stripping system for separating said waste water into waste vapor and waste water such that the waste water contains about 2 percent of low-boiling point impurities in the form of combustible hydrocarbons and high-boiling point impurities, a combustion chamber into which said waste vapor is introduced and combusted into clean fumes, a forced-circulation evaporation system comprising first, second and third stages for further concentrating said waste water into a fluid concentrate of high boiling point impurities and a waste vapor containing low boiling point impurities in gaseous form together with steam, a waste-vapor outlet from the first stage being connected with said combustion chamber, first and second oxidation chambers into which waste vapors from said second and third stages are introduced and oxidized into purified waste vapor respectively, means for introducing pressurized air into the oxidation chambers, means for introducing waste vapor from said second and third stages into first and second heat exchangers respectively, means for introducing the purified waste said first and second oxidation chambers into said first and second heat exchangers respectively, to raise the temperature of the waste vapor to the starting oxidation temperature in the respective oxidation chambers, means for introducing the waste water to be purified into the stripping system, means for conveying the waste-water impurities from the stripping system to the three-stage evaporation system, and means means for introducing said purified waste vapor from said first and second heat exchangers into said first and second stages respectively, to condense said purified waste vapors into purified waste water, and means for removing said purified waste water from said first and second stages.

3. A process for heat purifying waste water contaminated with high- and low-boiling point organic impurities which comprises introducing said waste water into a stripping column so as to separate said waste water into waste vapor containing low-boiling point impurities and waste water containing about 2 percent of low-boiling point impurities in the form of combustible hydrocarbons and high-boiling point impurities, said waste vapor containing said low-boiling point impurities being supplied to a combustion chamber operating at a temperature in the range of from 900° to 1200° C. producing substantially clean combustion gases, said waste water being introduced into a forced-circulation evaporation system comprising first, second and third evaporation stages so as to further concentrate said waste water such that it leaves said evaporation stages as a concentrate of high-boiling point impurities in a fluid condition and waste vapors containing said low boiling point impurities in gaseous form together with steam, wherein the waste vapors from the first stage are fed directly to a combustion chamber where combustion takes place at 900° to 1200° C., thereby completely oxidizing all of the organic impurities therein, the waste vapors from the second and third stages being heated to about 600° C. while simultaneously introducing pressurized air at 600° C. and the waste vapor from said second and third stages into first and second oxidation chambers, respectively, where temperatures of about 800° C. are obtained by means of spontaneous combustion to thereby bring about complete combustion or oxidation of the organic, low-boiling point impurities present, said heat for heating the waste vapors from the second and third stages being derived from heat exchange with the purified hot waste vapors of the respective oxidation chambers, introducing the resulting steam-gas flow free of organic materials comprising purified waste vapors together with resulting combustion gases from said first and second oxidation chambers into said first and second stages respectively, to produce a condensate of pure water while a portion of the steam remains uncondensed, the overall process being such that the concentrate leaving the third evaporation stage contains concentrated high-boiling point impurities, the entire evaporation and oxidation process taking place under pressure of about 3–20 atmospheres, gauge, said stripping column being operated with the uncondensed remainder of the steam and the oxidizing gas from the evaporation system.

4,236,975

RECOVERY OF METHYL HEPTAFLUOROBUTYRATE FROM WATER BY DISTILLATION

William V. Childs, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 867,078, Jan. 5, 1978, Pat. No. 4,156,791, which is a continuation of Ser. No. 695,217, Jun. 11, 1976, abandoned. This application Dec. 21, 1978, Ser. No. 972,108

Int. Cl.[2] **B01D** *3/36;* **C07C** *69/62*

U.S. Cl. 203—14 **5 Claims**

4. The process of separating a mixture containing water and methyl heptafluorobutyrate which comprises the steps of:

(a) distilling a mixture comprising water and methyl heptafluorobutyrate to produce an overhead water/methyl heptafluorobutyrate azeotrope,

(b) condensing said azeotrope,

(c) cooling said azeotrope to effect a phase separation into a light, predominantly aqueous liquid phase, and a heavy predominantly organic liquid phase, and

(d) returning said heavy predominantly organic liquid phase to said distillation step (a) until the water content of the original admixture is substantially exhausted,

thereby obtaining a substantially pure methyl heptafluorobutyrate.

4,236,976

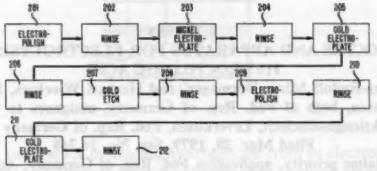
PREVENTING STAINS ON MULTIPLE-ELECTROPLATED ARTICLES

Paul A. Kohl, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 8, 1979, Ser. No. 92,472

Int. Cl.[3] C25D *5/02, 5/34, 5/52*

U.S. Cl. 204—15 **11 Claims**



1. A method of manufacturing an article comprising the steps in sequence of:

(a) electroplating a first metal onto a first substrate material in a first region of the article; and

(b) electroplating a lustrous metal onto a second substrate material in a second region of the article;

wherein said first metal is the same as, or different than, said lustrous metal, and wherein said first substrate material is the same as, or different than, said second substrate material,

CHARACTERIZED by steps comprising removing electroless deposits of said first metal from said second substrate material in said second region of the article after said electroplating of said first metal and before said electroplating of said lustrous metal.

4,236,977

METHOD FOR PREPLATING STEEL SURFACES

Nazzareno Azzerri, Pomezia, and Giovanni Milanese, Genoa, both of Italy, assignors to Italsider, S.p.A., Genoa, Italy

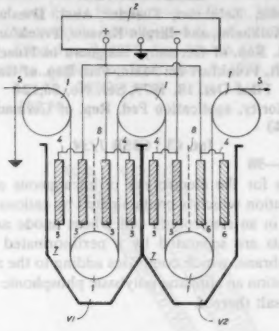
Continuation-in-part of Ser. No. 806,508, Jun. 14, 1977, abandoned. This application Aug. 25, 1978, Ser. No. 936,931

Claims priority, application Italy, Jun. 24, 1976, 50110 A/76

Int. Cl.[3] C25D *5/36*

U.S. Cl. 204—29 **3 Claims**

1. A method for raising the susceptibility to plating of steel articles by pre-plating comprising, passing a steel object through an electrolytic cell containing in a first part thereof an aqueous neutral solution in which the steel object is an anode passing the steel object through a second part of said cell containing said solution solution in which said steel object has current of cathodic polarity applied thereto so that it functions as a cathode, said second part of the cell having soluble anode electrodes made of a metal chosen from the group consisting of tin, zinc, copper, nickel manganese and iron, applying said current at a density effective to preplate said steel object with cations supplied by said soluble anode electrodes, said solution having a concentration of essentially 0.5 to 2.4 M in sodium sulfate with a pH between 6 and 8, said current density being



between 15 and 60 Amps./dm.[2], and the temperature of the solution ranging between 30° to 60° C.

4,236,978

STABLE LEAD DIOXIDE ANODE AND METHOD FOR PRODUCTION

Raymond D. Prengaman, Arlington, and Herschel B. McDonald, Red Oak, both of Tex., assignors to RSR Corporation, Dallas, Tex.

Filed Feb. 8, 1980, Ser. No. 119,743

Int. Cl.[3] C25B *1/30, 11/02, 11/12, 11/16*

U.S. Cl. 204—57 **11 Claims**

1. A method for producing a stable lead dioxide coated insoluble anode, which comprises:

(a) covering a graphite substrate with a nonconductive tight-fitting inert cloth;

(b) electrodepositing a hard, dense lead dioxide layer on the covered graphite substrate from an electrolyte in which the lead level is maintained above about 40 g/l until the mesh material is completely coated with a layer of lead dioxide.

4,236,979

COMPOSITE DIAPHRAGMS AND PROCESS FOR ELECTROLYZING ALKALI METAL CHLORIDE

Oronzio de Nora; Luigi Giuffre, and Giovanni Modica, all of Milan, Italy, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Division of Ser. No. 13,830, Feb. 22, 1979, Pat. No. 4,186,076. This application Feb. 22, 1979, Ser. No. 50,983

Int. Cl.[3] C25B *1/34, 13/04, 13/08*

U.S. Cl. 204—98 **16 Claims**

1. An electrolytic process for the electrolysis of a solution of an alkali metal halide comprising providing an electrolyte containing an alkali metal halide in an electrolytic cell with an anode and a cathode separated by a porous, electrolyte permeable composite diaphragm comprising a chemically inert fibrous porous matrix or substrate impregnated with a copolymer of divinylbenzene and at least one member of the group consisting of 2-vinylpyridine and 4-vinylpyridine, passing an electrolysis current through the anode, cathode and electrolyte and recovering electrolysis products from the cell.

4,236,980
PROCESS FOR ALKALI METAL CHLORIDE ELECTROLYSIS

Nikolaj Medic, Kelkheim; Theodor Auel, Ilvesheim; Dieter Bergner, Kelkheim, and Jürgen Russow, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 18, 1979, Ser. No. 86,124

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845943

Int. Cl.³ C25B *1/34*

U.S. Cl. 204—98 **4 Claims**

1. Process for the electrolysis of an aqueous alkali metal chloride solution which is contaminated by cations of polyvalent metals, in an electrolysis cell whose anode and cathode compartments are separated by a perfluorinated cation exchange membrane, which comprises adding to the alkali metal chloride solution an aliphatic polybasic phosphonic acid or the alkali metal salt thereof.

4,236,981
HYDROMETALLURGICAL PROCESS FOR TREATING NICKEL MATTES

Jean-Michel Demarthe, Viroflay; Louis Gandon, Rambouillet, and Monique Goujet, Versailles, all of France, assignors to Societe Metallurgique le Nichel-S.L.N., Paris, France

Division of Ser. No. 849,603, Nov. 8, 1977, Pat. No. 4,173,502, which is a continuation of Ser. No. 649,744, Jan. 16, 1976, abandoned. This application Jul. 5, 1979, Ser. No. 54,888

Claims priority, application France, Jan. 16, 1975, 75 01264; Dec. 12, 1975, 75 38166

Int. Cl.³ C25C *1/08*; C22G *23/04, 3/00*; C01G *53/04*

U.S. Cl. 204—113 **13 Claims**

1. A process of recovering high purity nickel from an aqueous solution containing sulfate ions and nickel, lead, iron, chromium, arsenic and aluminum chlorides, comprising:

(a) exposing the solution which has a concentration of nickel of at least 100 g/l to partial electrolysis employing a soluble nickel anode to obtain a deposit of elemental nickel containing elemental lead and an aqueous phase containing nickel, iron, chromium, arsenic aluminum and sulfate ions;

(b) contacting the aqueous phase of (a) with an organic phase comprising at least one diester of orthophosphoric acid whereupon the nickel and sulfate ions remain in the aqueous phase and the other ions pass into the organic phase;

(c) recovering the nickel from the aqueous phase of (b); and

(d) recovering the nickel from the deposit of (a).

4,236,982
ELECTROLYSIS OF LEAD AZIDE

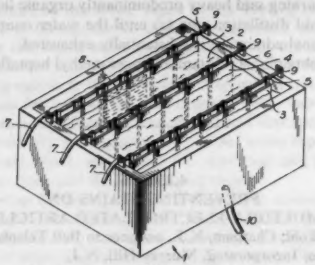
Jack R. Polson, Burlington, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 14, 1979, Ser. No. 75,565

Int. Cl.³ C25C *1/18*

U.S. Cl. 204—116 **17 Claims**

1. A process for producing metallic lead by the electrolysis of lead azide which comprises subjecting lead azide dissociated in an aqueous alkaline electrolyte in an electrolysis apparatus



to electrolysis whereby the lead contained therein plates out at the cathode in the electrolysis apparatus.

4,236,983
PROCESS AND APPARATUS FOR ELECTROLYSIS OF HYDROCHLORIC ACID

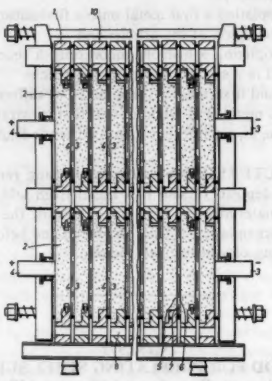
Franz-Rudolf Minz, Dormagen, and Herbert Wiechers, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 28, 1979, Ser. No. 24,748

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816152

Int. Cl.³ C25B *1/02, 1/26, 9/00*

U.S. Cl. 204—129 **6 Claims**



1. In the production of chlorine and hydrogen from hydrochloric acid by electrolysis in an electrolysis apparatus comprising multi-stages arranged in at least an upper and a lower stage and a plurality of vertically arranged bipolar electrodes in each stage, a diaphragm arranged between each two electrodes to divide the electrolysis chambers formed between them into an anolyte chamber and a catholyte chamber, and outlet and inlet devices for the electrolyte in each stage, the improvement which comprises electrolyzing the hydrochloric acid in at least two successive stages, and degassing the hydrochloric acid after leaving one stage and before introducing it into the next stage.

4. In a hydrochloric acid electrolysis cell comprising a plurality of vertically arranged bipolar electrodes, a diaphragm arranged between each two electrodes to divide the electrolysis chamber formed between them into an anolyte chamber and a catholyte chamber, and outlet and inlet devices for the electrolytes, the improvement which comprises additional inlet

and outlet devices provided in a horizontal plane perpendicular to the electrode surface thereby dividing each electrolysis cell into a plurality of superposed stages, the height of the partial electrode surface in each stage ranging from about 40 to 80 cm.

4,236,984

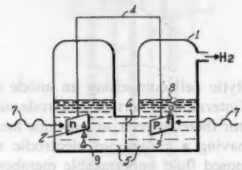
HYDROGEN GAS GENERATION UTILIZING A BROMIDE ELECTROLYTE, AN AMORPHOUS SILICON SEMICONDUCTOR AND RADIANT ENERGY

Daniel H. Grantham, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 956,760, Nov. 1, 1978. This application Nov. 21, 1979, Ser. No. 96,596

Int. Cl.³ C25B *1/02, 1/00;* **H01L** *31/04*

U.S. Cl. 204—129 **12 Claims**



1. A process for producing hydrogen gas from an electrolyte solution in an electrolytic cell, wherein the improvement comprises utilizing a solution of a bromide compound as the electrolyte in conjunction with radiant energy and an n-type semiconducting amorphous silicon photo anode to at least partially power the electrolytic cell.

4,236,985

METHOD FOR MACHINING WORKS OF CURRENT-CONDUCTING MATERIAL WITH CURRENT-CONDUCTING ABRASIVE TOOLS

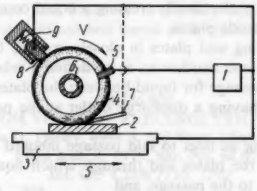
Eduard Y. Grodzinsky, ulitsa Marii Ulyanovoi, 11, kv. 117; Roalda B. Isakova, ulitsa Vavilova, 70, korpus 3, kv. 237; Lidia S. Zubatova, ulitsa Ljublinskaya, 111, stroenie 1, kv. 120; Anna T. Makonovitskaya, ulitsa Malysheva, 19, kv. 288, and Aron K. Grinberg, ulitsa Dorozhnaya 34, kv. 25, all of Moscow, U.S.S.R.

Filed May 1, 1979, Ser. No. 35,096

Claims priority, application U.S.S.R., May 3, 1978, 2607711

Int. Cl.³ B23P *1/04, 1/10;* **C25F** *3/02, 7/00*

U.S. Cl. 204—129.43 **2 Claims**



1. A method for machining works of a current-conducting material with current-conducting abrasive tools in a liquid medium with a conductance of 10^{-4} to $2 \cdot 10^{-2}$ ohm$^{-1} \cdot cm^{-1}$, whereby voltage pulses are applied to the tool and the work, the improvement residing in that the working is carried out with a pulse duration of 0.5 to 10 msec, a pulse repetition frequency of 10 to 500 Hz and an amplitude of pulses ranging from a minimum of 3 V to a maximum which is below a level required for a breakdown of the liquid medium between the tool and the work.

4,236,986

APPLYING ANNEALING SEPARATORS TO ORIENTED GRAIN ELECTRICAL STEEL SHEET

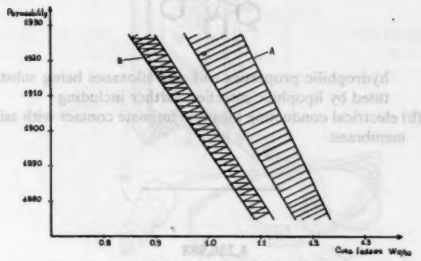
Nereo Vantini, and Paolo Marini, both of Rome, Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Filed Jun. 7, 1979, Ser. No. 46,422

Claims priority, application Italy, Jun. 9, 1979, 49791 A/78

Int. Cl.³ C25D *13/02, 13/10, 13/16*

U.S. Cl. 204—181 N **7 Claims**



1. In a process for the production of oriented grain electrical steel sheet which comprises, after preliminary treatment and cold rolling to the final thickness required, the steps of subjecting the cold rolled sheet to a continuous decarburization treatment, coating the decarburized sheet with a composition of annealing separator, coiling the strip covered in this way and dried, into coils, and subjecting these coils to an annealing treatment at high temperature in a bell furnace; the improvement comprising in sequence the following steps:

preparing a dispersion of annealing separator in a non-aqueous based dispersion medium, said annealing separator and dispersion medium having a predetermined water content;

placing in this dispersion a pair of electrodes, said electrodes having their upper edge less than 100 mm from the free surface of the dispersion;

continuously immersing in this dispersion the decarburized steel strip, making it pass between the paired electrodes;

applying to said steel strip and said electrodes opposite polarities of an electrical field within the range of 30 to 600 V/cm;

applying to the surface of the steel strip, removed from the dispersion and coated with a continuous layer of the composition of annealing separator during its passage between the said electrodes, a gas stream; and

coiling without further treatment the strip into coils for annealing in the bell furnace.

4,236,987

ELECTRODE HAVING MEMBRANE WITH ION SELECTIVE PROPERTIES

Johannes G. Schindler, Marburg an der Lahn, and Wilfried Schael, Bad Homburg von der Hohe, both of Fed. Rep. of Germany, assignors to Dr. E. Fresenius Chemisch Pharmazeutische Industrie KG Apparatebau KG, Bad Homburg von der Hohe, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 960,167

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750807

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—195 M **8 Claims**

1. An ion selective electrode, being selective with respect to predetermined alkali or alkaline-earth metal ions comprising:

(a) a membrane comprising

(i) a carrier membrane composed of a non-ion selective carrier material and

(ii) an ion selective material in intimate contact with said carrier, said ion selective material comprising at least one predetermined molecular species exhibiting ion selectivity with respect to predetermined alkali or alka-

line-earth metal ions said molecular species being selected from the group consisting of open chain, branch chain or cyclic siloxanes comprising a plurality of Si-O-Groups, the oxygen atoms of said siloxanes having

hydrophilic properties and said siloxanes being substituted by lipophilic moieties, further including

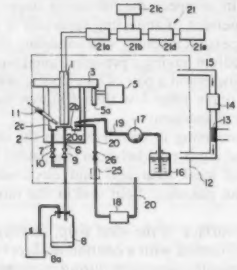
(b) electrical conducting means in intimate contact with said membrane.

4,236,988

APPARATUS FOR MEASURING ION ACTIVITIES

Nobuyoshi Suzuki, Hachiouji, and Shigeru Yoshinari, Tokyo, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1979, Ser. No. 15,440
Claims priority, application Japan, Mar. 10, 1978, 53-27462
Int. Cl.[3] G01N *27/28*
U.S. Cl. 204—195 R **5 Claims**



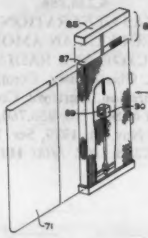
1. An apparatus for measuring ion activities comprising an electrode assembly, a sample cup having a circumferential wall whose top surface is designed as a standard plane for properly positioning said electrode assembly, a support which serves for holding said electrode assembly and is arranged on the circumferential wall of said sample cup, a mechanism for moving up and down said electrode assembly by way of said support, a pipette for injecting a constant volume of sample fluid into said sample cup, a draining system for sucking liquid from said sample cup and discarding said liquid and a thermostatted chamber accommodating at least said electrode assembly, said sample cup and said sample injecting pipette, and so operating as to inject a sample fluid into said sample cup, lower said electrode assembly for bringing said sample fluid into contact with said electrode assembly, move up and down said electrode assembly for assuring intimate contact between said electrode assembly and said sample fluid, measure ion activities in said sample fluid, inject a reference solution into said sample cup after measurements of ion activities in said sample fluid, wash said electrode assembly and said sample cup with said reference solution, discard said reference solution, inject the reference solution once again and measure ion activities therein, and determine correct ion activities in said sample fluid on the basis of the ion activities measured in said sample fluid and those in said reference solution.

4,236,989

ELECTROLYTIC CELL

Lois A. Dahlberg, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 7, 1978, Ser. No. 922,716
Int. Cl.[3] C25B *13/02, 13/04, 11/03*
U.S. Cl. 204—252 **7 Claims**



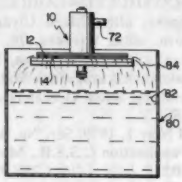
1. An electrolytic cell comprising an anode and cathode electrode pair of intermeshed vertical electrode surfaces with a synthetic separator therebetween, at least one member of said electrode pair having a continuous electrodic surface with horizontally disposed fluid impermeable members at the top and bottom of said continuous electrodic surface and synthetic separatof being sealably mounted at said impermeable members.

4,236,990

TREATER WITH SELF-CLEANING ELECTRODES

Arthur S. King, 8021 Cherokee La., Leawood, Kans. 66206

Filed May 29, 1979, Ser. No. 42,775
Int. Cl.[3] C25B *9/00*; C02F *1/46*; C25B *11/02*
U.S. Cl. 204—275 **7 Claims**



1. A device for electrically treating a liquid comprising:

a pair of electrode plates;

means mounting said plates in closely spaced, facing relationship to one another so as to define a relatively flat, restricted passage for liquid between the plates,

said passage having a discharge outlet at the periphery of said plates;

means defining an inlet to said passage inboard of said periphery of the plates and through which liquid may be introduced to the passage; and

means for supplying liquid to said inlet at a pressure that will maintain said passage filled with a pressurized liquid sheet flowing toward and exiting from said outlet, whereby the sheet cleans said plates while being treated thereby,

one of said plates having its periphery set inwardly with respect to that of the other plate,

said other plate having a continuous marginal groove located inboard of its periphery but outboard of the periphery of said one plate for causing said liquid sheet to assume an umbrella-like configuration as it is discharged from said outlet.

4,236,991

ELECTROCHEMICAL CELLS

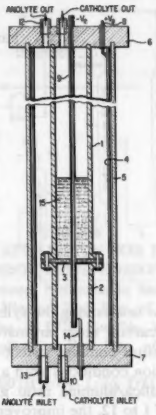
John R. Backhurst, Allendale; Martin Fleischmann, Chandlersford; Francis Goodridge, and Raymond E. Plimley, both of Newcastle-upon-Tyne, all of England, assignors to National Research Development Corporation, London, England

Division of Ser. No. 828,431, Aug. 29, 1977, which is a continuation of Ser. No. 288,387, Sep. 12, 1972, abandoned, which is a continuation-in-part of Ser. No. 24,195, Mar. 31, 1970, which is a continuation-in-part of Ser. No. 639,803, May 19, 1967. This application Jul. 13, 1979, Ser. No. 57,368

Claims priority, application United Kingdom, May 24, 1966, 23070/66

Int. Cl.[3] C25B *9/00*

U.S. Cl. 204—272 2 Claims



1. An electrode arrangement for an electrochemical cell comprising at least one electrode chamber having a porous base, said chamber having a space beneath said porous base and containing a layer of discrete particulate solids above said base, said solids being at least one member of the group consisting of (a) conducting particles and (b) non-conducting particles coated with conducting material, means for introducing liquid electrolyte to the space beneath said porous base and causing said electrolyte to flow through said base, the base being arranged to cause electrolyte flow through said layer of particles to be substantially uniform, means to control said flow so as to cause the particles to be levitated, such that the layer is expanded to form and maintain a fluidised bed of said particles within said chamber, and at least one current-carrying member extending into said chamber to contact said fluidised bed, whereby said fluidised bed forms an extended area electrode for the cell.

4,236,992

HIGH VOLTAGE ELECTROLYTIC CELL

Constantinos D. Themy, 4984 S. 360 West, Murray, Utah 84106

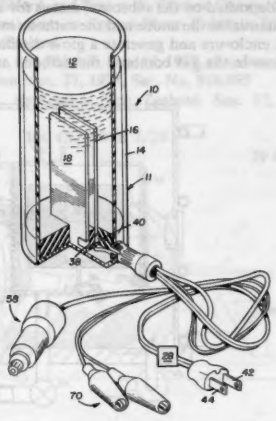
Filed Aug. 6, 1979, Ser. No. 64,073

Int. Cl.[3] C25B *1/26, 1/02*

U.S. Cl. 204—278 10 Claims

1. An electrode useful for extended periods of time at voltages above 20 volts, comprising:

a laminated body of a platinum group metal foil bonded to an intermediate layer of tantalum, niobium or alloys thereof, said intermediate layer being bonded to a substrate of titanium or alloys thereof, said platinum group metal being platinum, rhodium, iridium, ruthenium or alloys thereof, said laminated body having a first bonding alloy zone at at least most of an interface between said platinum group metal foil and said intermediate layer, a second bonding alloy zone at at least most of an interface between said intermediate layer and said substrate, and a smooth continuous outer surface on said platinum group metal foil



which is substantially unaltered by said bonding alloy zones.

4,236,993

ELECTRODE FOR WATER ELECTROLYSIS

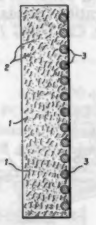
Rene Muller, Fislisbach, and Samuel Stucki, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Nov. 29, 1979, Ser. No. 98,688

Claims priority, application Switzerland, Jan. 17, 1979, 434/79; Jan. 17, 1979, 435/79

Int. Cl.[3] C25B *11/06, 11/12, 11/14, 11/10*

U.S. Cl. 204—294 12 Claims



1. An electrode for water electrolysis which comprises:

a solid solution of graphite and polytetrafluorethylene impregnated with a catalyst mixture of platinum metal oxides, said solid solution being pressed and sintered on a reinforcing net of metal cloth.

4,236,994

APPARATUS FOR DEPOSITING MATERIALS ON SUBSTRATES

Ronald A. Dugdale, Didcot, England, assignor to United Kingdom Atomic Energy Authority, London, England

Division of Ser. No. 540,391, Jan. 13, 1975, abandoned. This application Aug. 16, 1978, Ser. No. 934,019

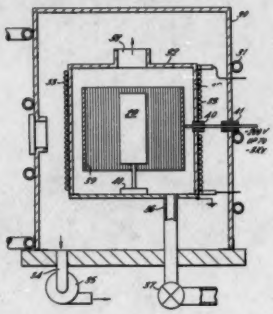
Claims priority, application United Kingdom, Jan. 24, 1974, 3315/74

Int. Cl.[3] C23C *15/00*

U.S. Cl. 204—298 5 Claims

1. Apparatus for depositing material on a substrate by a sputter deposition process and comprising an enclosure for

containing an ionizable gaseous environment at a predetermined pressure, an anode and a cathode located in the enclosure, the cathode having at least a part thereof of the material to be deposited on the substrate, means for applying an electrical potential to the anode and the cathode in order to ionize gas in the enclosure and generate a glow discharge in which positive ions in the gas bombard the cathode and thereby sputter



atoms of the material from the cathode, the cathode, in operation, being so positioned relative to the substrate that the sputtered material passes through the gas and deposits on the substrate, and heating means, disposed adjacent to the enclosure walls, for heating the enclosure walls so as to heat the gas through which the sputtered atoms pass and thereby suppress homogeneous nucleation of the sputtered atoms in the gas.

4,236,995

PROCESS FOR RECOVERING BITUMEN FROM TAR SAND

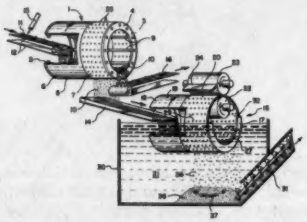
Jan Kruyer, Edmonton, Canada, assignor to Kruyer Tar Sand Development, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 913,593, Jun. 8, 1978. This application May 10, 1979, Ser. No. 37,897

Claims priority, application Canada, Feb. 10, 1976, 245340

Int. Cl.³ C10G *1/04*

U.S. Cl. 208—11 LE **35 Claims**



1. A method for recovering bitumen from oil sand comprising:

(a) providing an oil sand slurry in which bitumen and solids are dispersed in water with the bitumen having a viscosity of between about 0.1 and 10,000 poises,

(b) temporarily supporting the slurry with an apertured barrier having an oleophilic surface, said barrier being partly immersed in a heated water bath to permit a separation of slurry solids from bitumen, the solids dropping through the apertures while the bitumen adheres to and coats the oleophilic surface of the barrier and the walls of apertures within the barrier,

(c) forcing the bitumen adhering to the oleophilic barrier surface through the apertures with a transfer roller after the barrier has been removed from the bath; and

(d) recovering the bitumen from the surface of the barrier to which it has been transferred and out of the apertures, while it is out of the bath.

4,236,996

XYLENE ISOMERIZATION

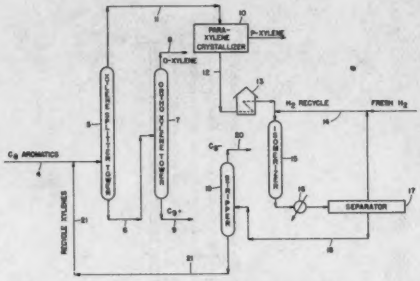
Samuel A. Tabak, Wenonah, and Roger A. Morrison, Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 914,645, Jun. 12, 1978, Pat. No. 4,188,282. This application May 25, 1979, Ser. No. 43,395

The portion of the term of this patent subsequent to Feb. 12, 1997, has been disclaimed.

Int. Cl.³ C10G *35/04*

U.S. Cl. 208—134 **10 Claims**



1. In a process for isomerizing the xylene content of a charge mixture of eight carbon atom aromatic hydrocarbon compounds which mixture contains xylene and ethylbenzene by contact at conversion conditions with a catalyst comprising a zeolite having a silica/alumina ratio greater than 12 and a constraint index of 1 to 12, the improvement which comprises using as said catalyst a steamed zeolite and maintaining a conversion temperature of about 700° F. to about 1000° F.; said zeolite having been steamed prior to said contact under a temperature and pressure and for a period of time such that the steamed zeolite requires an increased reaction temperature of at least 50° F. to equal the ethylbenzene conversion by the unsteamed zeolite.

4,236,997

AIR SEPARATOR APPARATUS

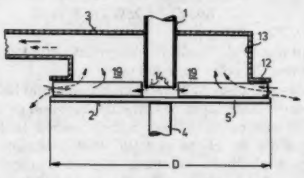
Josef A Wessel, Am Sonnenhof 154, 8131 Aüfkirchen, Fed. Rep. of Germany; Manfred Müller; Otto Heinemann, both of Ennigerloh, Fed. Rep. of Germany, and Norbert Bredenholler, Oelde, Fed. Rep. of Germany, assignors to Josef Wessel, Aüfkirchen and Polysius AG, Beckum, both of, Fed. Rep. of Germany

Filed Apr. 12, 1979, Ser. No. 29,457

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1978, 2817725

Int. Cl.³ B07B *7/083*

U.S. Cl. 209—144 **23 Claims**



1. An air separator comprising at least one stationary extraction housing having a peripheral wall and being open at one

end; a rotor adjacent said open end of said housing having one face of said rotor confronting said housing; means for charging said one face of said rotor centrally through said housing with material to be separated; a plurality of circumferentially spaced feed passages on said face of said rotor communicating with said charging means and extending substantially radially thereof beyond the peripheral wall of said housing to form spaces between adjacent passages; means for drawing extraction air through said spaces into and out of said housing; and stationary means adjoining said passages and overlying those portions of said passages which extend beyond said peripheral wall of said housing and axially delimiting said spaces to form extraction openings between adjacent passages.

4,236,998

PROCESS AND APPARATUS FOR PURIFYING A FIBROUS SUSPENSION

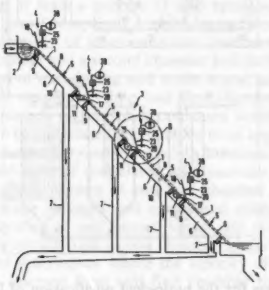
Karel A. G. Heys, Gennep, Netherlands, assignor to Feldmühle Aktiengesellschaft, Viersen, Fed. Rep. of Germany

Filed Mar. 1, 1979, Ser. No. 16,499

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809142

Int. Cl.³ B07B *1/04, 1/36;* D21D *5/04*

U.S. Cl. 209—246 **19 Claims**



1. Process for removing impurities, such as printing inks, binders, fibre fragments and pigments, from a fibrous suspension of waste paper containing water, comprising passing the fibrous suspension downwardly over an inclinded sieve from an upper end to a lower end and removing the impurities through the sieve with a proportion of the water from the fibrous suspension, wherein the improvement comprises interrupting the downward flow of the fibrous suspension over the inclined sieve at least once between the upper end and lower end and directing the interrupted downward flow into a groove-like trough in the downward flow path over the sieve and shaping the surfaces of the trough in the direction between the upper end and lower end for subjecting the fibrous suspension flowing into the trough to a swirling motion about an axis extending transversely of the direction between the upper and lower ends for homogenizing the flow entering the trough and returning the homogenized fibrous suspension from the trough onto the sieve for downward flow thereover below the trough.

4,236,999

SEPARATION OF SOLIDS FROM LIQUIDS BY SCREENING

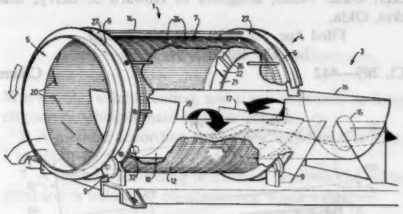
George Burgess, Milford, and Ernest W. Pitches, Orewa, both of New Zealand, assignors to Contra-Shear Holdings Limited, Auckland, New Zealand

Continuation of Ser. No. 833,466, Sep. 12, 1977, abandoned. This application Nov. 27, 1978, Ser. No. 964,055

Claims priority, application New Zealand, Sep. 17, 1976, 182084

Int. Cl.³ B07B *1/24*

U.S. Cl. 209—250 **29 Claims**



1. An apparatus for the separation of solids and liquids from a suspension by screening, said apparatus comprising:

a screening drum having a hollow interior and a screening wall which has a plurality of screening wires spaced apart in a parallel arrangement about the periphery of the drum and lying subtantially axially along the drum;

mounting means whereby said drum is mounted to be rotatable in one direction about its axis which lies in a substantially horizontal direction plane;

driving means to rotate the drum; and

inlet means to introduce a flow of the suspension into the interior of the drum and to direct substantially all of this flow against an inner surface of the wall of the drum so that the flow of the suspension where it strikes the drum wall is in a direction opposing the direction of movement of the wall of the drum as caused by said rotation of the drum.

4,237,000

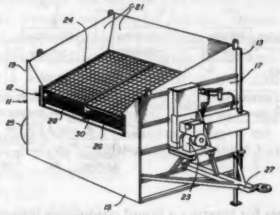
SHAKER ASSEMBLY FOR SCREENING AND SCALPING

James L. Read, and William K. Morgan, both of Halifax, Mass., assignors to F. T. Read & Sons, Inc., Rockland, Mass.

Filed Mar. 5, 1979, Ser. No. 17,757

Int. Cl.³ B07B *1/48*

U.S. Cl. 209—319 **4 Claims**



1. In a shaker assembly for separating fine material from coarse material comprising longitudinal side plates, structural cross beams joining the side plates, a screen assembly spanning the space between the side plates and supported by the cross beams, and means for shaking the plates, cross beams and screen assembly, the improvement of:

an upper screen assembly supported on an upper level of

cross beams and a split lower screen assembly supported on a lower level of cross beams; and

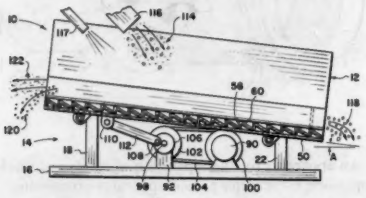
at least one rigid longitudinal center plate generally parallel to and between the side plates and joining the upper and lower levels of structural cross beams such that forces applied to the screen assembly are transmitted through the center plate to the joined cross beams.

4,237,001

ORE CLASSIFIER

Leon Walker, Welch, Okla., and Howard S. Berry, Rte. 1, Blue Jacket, Okla. 74333, assignors to Howard S. Berry, Blue Jacket, Okla.

Filed Apr. 30, 1979, Ser. No. 34,246
Int. Cl.³ B03B *5/04, 5/26*
U.S. Cl. 209—442 **6 Claims**



6. An ore classifier comprising:

a frame member;

an elongated inclined trough movably secured to the frame member and having a corrugated floor;

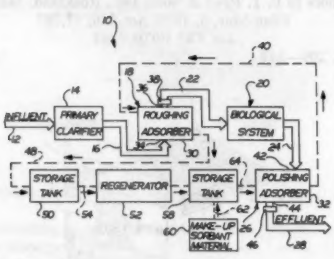
a pair of oppositely disposed longitudinal jet passageways, one disposed along each edge of the trough in restricted communication with the floor of the trough, said passageways being open at the upper ends and closed at the lower ends; and means to vibrate the trough with respect to the frame member.

4,237,002

MULTI SORPTION PROCESS AND SYSTEM

George E. Strudgeon, Erie, Pa., and Aloysius X. Hiltgen, Inverness, Fla., assignors to Zurn Industries, Inc., Erie, Pa.

Filed Jan. 24, 1979, Ser. No. 6,421
Int. Cl.³ B01D *15/00*
U.S. Cl. 210—163 **7 Claims**



1. A process for treating a liquid containing impurities which inhibit the biological treatment of the liquid, said process comprising the steps of:

a. providing at least a first sorbent treatment zone and a second sorbent treatment zone in which the first sorbent treatment zone includes a first column containing a bed of granular solid activated carbon and the second sorbent treatment zone includes a second column containing a bed of granular solid activated carbon;

b. treating the liquid in the first sorbent treatment zone with granular activated carbon which has been previously used to treat the liquid in the second sorbent treatment zone by passing the liquid upwardly through the bed of activated carbon contained in the first column;

c. treating the liquid in a biological treatment system;

d. treating the liquid received from said biological treatment system in the second sorbent treatment zone with fresh granular activated carbon by passing the liquid downwardly through the bed of activated carbon contained in the second column;

e. removing the granular activated carbon from the first zone;

f. reactivating the granular activated carbon removed from the first zone; and

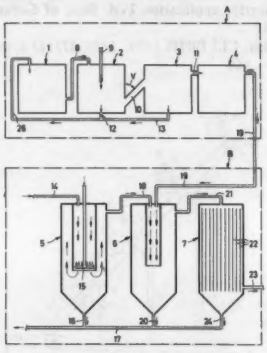
g. transferring the granular activated carbon from the second sorbent treatment zone to the first sorbent treatment zone after using the granular activated carbon in the second sorbent treatment zone and upon a breakthrough of the granular activated carbon in one of the sorbent treatment zones.

4,237,003

PROCESS FOR BIOLOGICAL PURIFICATION OF LIQUID WASTES

Refaat M. El-Sayed, Näsbydalsvägen 14, Täby, Sweden (18 331)

Filed May 9, 1978, Ser. No. 904,241
Claims priority, application Sweden, May 9, 1977, 7705386
Int. Cl.³ C02F *3/04*
U.S. Cl. 210—606 **10 Claims**



1. A process for the biological purification of liquid wastes wherein the wastes are contacted with active micro-organisms in a biological bed in order to achieve a degradation of organic impurities present in the wastes, which comprises:

(a) cultivating Gram-positive bacteria in an aerobic environment rich in nutrient thereby producing a suspension of extra-cellular enzymes and bacteria;

(b) separating the bacteria from the suspension by transferring the suspension into an environment poor in nutrient, wherein the bacteria enter into a dead phase and settle and whereby intra-cellular enzymes contained within the bacteria are separated from the suspension;

(c) adding the suspension of extra-cellular enzymes to the liquid wastes;

(d) conducting purification of the liquid wastes in the biological bed under substantially anaerobic conditions and in the presence of the extra-cellular enzymes so as to cause degradation of the wastes by means of anaerobic microorganisms; and

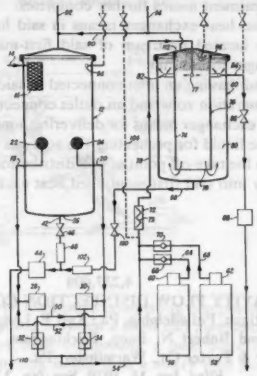
(e) removing purified liquid wastes from the biological bed.

4,237,004

METHOD FOR TREATING WASTE WATER

Robert C. Helke, Walworth, Wis., assignor to Le Mere Industries, Inc., Walworth, Wis.

Filed Oct. 2, 1978, Ser. No. 947,655
Int. Cl.³ C02F 1/24
U.S. Cl. 210—704 **12 Claims**



1. A method of treating waste water comprising:

collecting waste waters including solid and liquid wastes in a first vessel;

separating a portion of the relatively large solid particles having a predetermined minimum particle size from said waste waters;

removing a portion of said liquid waste from said first vessel;

adding a solids coagulant, effective in coagulating solid particles, and a chlorine containing disinfectant to said removed waste;

conveying at least a portion of said removed waste to a second vessel comprising a multicompartment vessel having a plurality of interconnected chambers including a first chamber and a second chamber and further including the steps of introducing said waste water, said coagulant, and said disinfectant into said first chamber to cause a major portion of the solids contained within said waste water to be coagulated and bubbled to an upper portion of said first chamber, and introducing additional waste water onto said layer of coagulated solid particles accumulated in the upper portion of said first chamber to filter said waste water through said coagulated solids within said first chamber of said second vessel and circulating said waste water into said second chamber for further coagulation and disinfection where the velocity of waste water flow is lowered from said first chamber to said second chamber, wherein a minor portion of the solids contained within said waste water floats to an upper portion of said second chamber thereby providing a purer water in said second chamber than in said first chamber of said multicompartmental vessel; and

removing the treated waste water from said second chamber.

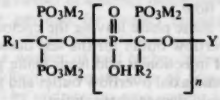
4,237,005

METHOD OF BREAKING OIL-IN-WATER EMULSIONS

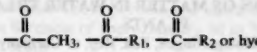
Larry W. Becker, Wilmington, Del., assignor to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 941,537, Sep. 11, 1978, Pat. No. 4,190,615. This application Jun. 4, 1979, Ser. No. 45,544
Claims priority, application Canada, Mar. 28, 1979, 324395
Int. Cl.³ B01D 17/04
U.S. Cl. 210—43 **7 Claims**

1. A method of breaking an oil-in-water emulsion comprising adding thereto an effective amount for the purpose of an aqueous solution of effective oligomeric phosphonate having the structural formula:



where R_1 and R_2 each represent a group having the formula C_xH_{2x+1}; x is from 6 up to and including 13; Y is



M is a water soluble cation; and n is 1 or greater so long as the oligomeric phosphonate is water soluble.

2. A method according to claim 1, wherein n is from about 1 to about 16.

7. A method according to claim 2, wherein the oil-in-water emulsion is industrial oil-containing wastewater.

4,237,006

CYCLONE SEPARATOR

Derek A. Colman, Lordswood, and Martin T. Thew, Bitterne, both of England, assignors to National Research Development Corporation, London, England

Filed May 24, 1979, Ser. No. 42,227
Claims priority, application United Kingdom, May 31, 1978, 25956/78
Int. Cl.³ B04C 5/081
U.S. Cl. 210—84 **19 Claims**

17. A method for removing a less dense liquid phase from a relatively large volume of more dense liquid phase, comprising:

injecting a mixture of the two phases through a plurality of substantially spaced tangential feeds into the internally generally cylindrical first portion of a cyclone separator which also has, axially adjacent to the cylindrical first portion but for an annular transitional internal surface means providing a step, and coaxial with said cylindrical first portion, an internally generally cylindrical second portion open at its far end distally of said cylindrical first portion to provide a denser-phase outlet, this cylindrical second portion being characterized by the absence of feed inlets except over said step from said cylindrical first portion, the cylindrical first portion having an axial overflow outlet for the less dense phase at its far end distally of the cylindrical second portion; and

axially adjacent to said cylindrical second portion but for an annular transitional internal surface means providing a second step, and coaxial therewith, an internally generally cylindrical third portion open at its far end thereby providing a denser phase outlet from said cylindrical third portion, said cylindrical third portion being characterized by the absence of feed inlets except over said second step from said cylindrical second portion;

the internal shape of said separator being governed by the following relationships:

$10 \leqq l_2/d_2 \leqq 25$

$0.04 \leqq 4A_i/\pi d_1^2 \leqq 0.10$

$0.1 \leqq d_0/d_2 \leqq 0.25$

$d_1 > d_2$

$d_2 > d_3$.

wherein:

d_0 = the internal diameter of said axial overflow outlet,

d_1 = the internal diameter of said cylindrical first portion,

d_2 = the internal diameter of said cylindrical second portion,

d_3 = the internal diameter of said cylindrical third portion,

l_2=the internal length of said cylindrical second portion, and

A_f=the total cross sectional area of all of said feeds into said cylindrical first portion measured at points of entry normal to inlet flow

collecting less dense phase leaving the cyclone separator via the axial overflow outlet for the less dense phase;

the pressure of injection at said feeds being greater than the pressure at said axial overflow outlet and greater than the pressure at said denser-phase outlet.

4,237,007

APPARATUS AND METHOD FOR THE THERMAL REGENERATION OF MATTER IN WATER TREATMENT PLANTS

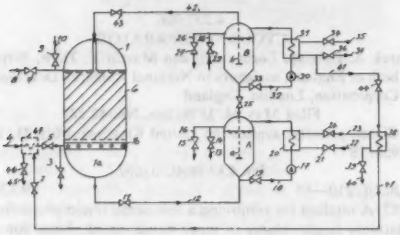
Kurt Marquardt, Holzgerlingen, Fed. Rep. of Germany, assignor to EVT Energie- und Verfahrenstecknik GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 15, 1978, Ser. No. 933,800

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738120

Int. Cl.³ B01D *15/02*

U.S. Cl. 210—181 **1 Claim**



1. Water treatment apparatus including an operating column for containing particulate treatment matter and treatment means for regenerating said matter, said treatment means including a regeneration column, a supply conduit having an inlet connected to the operating column and an outlet communicating with the regeneration column, a return conduit having an inlet communicating with the regeneration column and an outlet connected to the operating column, means for supplying aqueous transport liquid under pressure for transporting spent matter from the operating column through the supply conduit for delivery to the regeneration column, and means for supplying aqueous transport liquid under pressure for transporting matter regenerated in the regeneration column through the return conduit to the operating column, wherein the improvement comprises said treatment means further including:

a closed heating circulation loop connected to the regeneration column;

pumping means in said heating circulation loop for circulating aqueous transport liquid from the regeneration column through said loop;

heat exchanger means in said heating circulation loop for heating the aqueous transport liquid being circulated through the loop to a temperature sufficient to provide a predetermined regeneration temperature in said regeneration column;

a cooling column located between the regeneration column and the inlet to said return conduit; and

means for supplying a flow of aqueous cooling liquid to said cooling column for cooling heated matter from the regeneration chamber before said regenerated matter is transported back to the operating column, wherein

said cooling and regeneration columns comprise upper and lower zones, respectively, in a single vessel, and said treatment means further comprises a ring-shaped distribution means disposed in said vessel between the upper cooling zone and the lower regeneration zone, said heating circulation loop having an inlet connected at a take-off point on one side of the distribution means and an outlet connected at a reintroduction point on the opposite side of the distribution means from the take-off point,

said means for supplying a flow of aqueous cooling liquid is connected to the vessel above the cooling zone for flow downward through the cooling zone, and

said treatment means further comprises:

a second heat exchanger means in said heating circulation loop located upstream of said first-mentioned heat exchanger means and

a conduit having an inlet connected to said vessel below the regeneration zone and an outlet connected to said second heat exchanger means for delivering aqueous regeneration waste liquid for preheating the aqueous liquid withdrawn from the take-off point of said distribution means before its entry into said first-mentioned heat exchanger means.

4,237,008

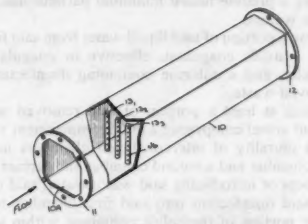
GRAVITY FLOW DISINFECTION CONTACTOR

Brian Ratigan, Philadelphia, Pa.; Karl E. Longley, San Antonio, Tex., and Robert N. Roop, Buckingham, Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Filed Jan. 11, 1979, Ser. No. 2,769

Int. Cl.³ C02B *1/18, 1/36*

U.S. Cl. 210—205 **4 Claims**



1. A gravity flow disinfection contactor comprising:

A. a conduit for conducting a water stream to be treated along the axis of the conduit, said conduit having a rectangular cross section and a cross-sectional diffusion plane adjacent the inlet thereto; and

B. an array of at least three diffusion tubes disposed at evenly-spaced positions within said plane across said conduit to bridge the side walls thereof, said tubes each having a row of equi-spaced orifices drilled therethrough to define diametrically opposed jet openings to produce jet emissions in opposing directions at right angles to the conduit axis, said orifices having a relatively small diameter, the spacing between said orifices in each row thereof being equal to about three time the orifice diameter, the spacing between the tubes in said array being equal to about ten times the opening diameter; and

C. means to supply a disinfectant solution to said tubes to create a dense cross fire of disinfectant jets dispersed throughout said plane, said jets being intercepted and deflected by the cross flowing water stream passing through said conduit to quickly interact therewith, the Reynolds number of the jets being greater than 5,000 to ensure turbulence, the velocity of the jets being at least twice the velocity of the cross flowing water stream.

4,237,009

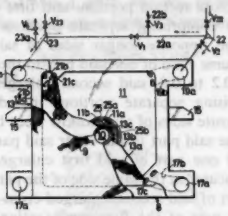
FILTRATION-COMPRESSION TYPE FILTER PRESS

Tetsuya Kurita, Takarazuka, Japan, assignor to Kurita Machinery Manufacturing Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 857,757, Dec. 5, 1977, abandoned. This application Nov. 28, 1978, Ser. No. 964,165

Int. Cl.[3] B01D *25/12*

U.S. Cl. 210—227 2 Claims



1. A filtration type filter press comprising compression filter plates suitably disposed between a fixed end plate and a movable end plate and each comprising a base plate centrally formed with an opening larger than a slurry feed port and a filtration-compression diaphragm, the diaphragm including two flexible fluid-tight sheets fitted to the front and rear surfaces of the base plate and having uneven surfaces with a filter cloth piece applied thereto, the diaphragm being integrally formed with a cylindrical portion interconnecting the sheets and extending through the opening in the base plate to define the slurry feed port, the filter plate including a pressure chamber formed between the base plate and each of the sheets and having at least a pressure fluid feed main channel communicating with the pressure chamber and a filtrate outlet channel opened to the filter surface of the diaphragm, the filter plate further comprising a displacement preventing ring made of metal fitting in the base plate opening around the cylindrical portion of the diaphragm, an annular groove formed in the outer periphery of said ring engaging an annular projection on the opening-defining inner periphery of the base plate to hold the ring against axial displacement, said ring being divided into segments both radially and transversely of its axis along the annular groove, said segments being fastened to each other by bolts.

4,237,010

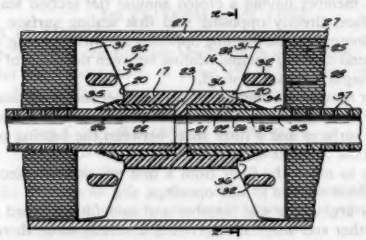
INTERCONNECTOR FOR FILTRATION MODULES

Robert D. Zimmerly, Kenosha, Wis., assignor to Ladish Co., Cudahy, Wis.

Filed Feb. 23, 1979, Ser. No. 14,441

Int. Cl.[3] B01D *35/00*

U.S. Cl. 210—232 3 Claims



1. An interconnector for filtration modules having axially extending tubes, said interconnector comprising inner and outer bonded together coaxial rubber sleeves, the inner sleeve comprising two sleeve portions of rubber of a lower indentation hardness than the outer sleeve and having end portions adapted for sealing engagement with said tubes, the outer sleeve comprising rubber of a higher indentation hardness than the inner sleeve portions for impact resistance, said outer sleeve having an inwardly projecting annular inwardly extending rib forming a washer of said higher indentation hardness rubber against which proximate ends of adjacent tubes abut and are separated by said washer, said washer having sufficient softness to be compressed slightly by axial pressure exerted thereon by said tubes to provide end seals for the axially extending tubes and wherein the outer sleeve has an indentation hardness of approximately 49 to 55 on the type D Durometer scale and the inner sleeve portions and said annular rib have an indentation hardness of approximately 60 to 70 on the type A Durometer scale.

4,237,011

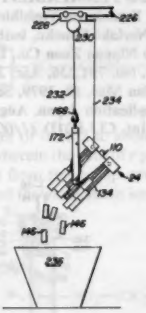
QUICK CHANGE CARTRIDGE FILTER

William A. Acosta, 4101 Laurel Dr., Lafayette Hill, Pa. 19444

Filed Feb. 10, 1977, Ser. No. 767,251

Int. Cl.[3] B01D *27/00, 35/00*

U.S. Cl. 210—237 35 Claims



8. A filter system comprising a tank and filter cage assembly, said filter cage assembly being removably mounted in said tank, said filter cage assembly comprising a plurality of replaceable filters, said tank having a channel for incoming fluid to be filtered, said channel projecting into said tank, said tank further having an exhaust channel for filtered fluid, said exhaust channel projecting into said tank, said cage assembly having notches therein, said notches being of the same shape as said channels, but being slightly larger in dimension than said channels, with said channels and notches cooperating to form guides in placing said cage assembly into said tank, said filter cage assembly having a chamber therein for receiving filtered fluid, said chamber having an outlet therefrom, and means on said filter cage assembly for removing said assembly from said tank.

4,237,012

BOOM FOR CONTAINING AND COLLECTING OIL SPILLS ON THE SURFACE OF A BODY OF WATER

Ernest Favre, 1725 Ecuvillens, Switzerland

Filed Sep. 6, 1978, Ser. No. 940,145

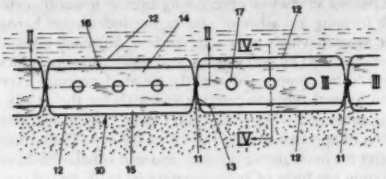
Claims priority, application Switzerland, Apr. 24, 1978, 4363/78

Int. Cl.[3] F02B *15/04*

U.S. Cl. 210—242.3 6 Claims

1. A boom for collecting oil from the surface of a body of water, the boom comprising a plurality of elongated tanks and means pivotally linking said tanks together end-to-end to form a continuous boom, each tank having longitudinally extending imperforate side walls and end walls, and a bottom defining an oil receiving cavity open at the top, at least one hole in the

bottom through which water can enter and leave the cavity, said hole communicating directly with said body of water, and flotation means for supporting the tank in a partially immersed, upright condition in the body of water with upper edges of said



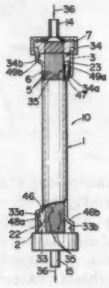
walls slightly above the surface of said water, whereby oil lifted by wave action over the upper edges of the walls will be collected in said tanks and displace water from said tanks through said holes in the bottoms of said tanks.

4,237,013

HOLLOW FIBER PERMEABILITY APPARATUS

Masahiro Yamazaki, Kamakura; Yoshihiro Makuta, Kawasaki; Yasushi Joh, and Noriaki Kaneko, both of Yokohama, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 791,236, Apr. 27, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,885
Claims priority, application Japan, Aug. 12, 1976, 51-96271
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.2 **11 Claims**



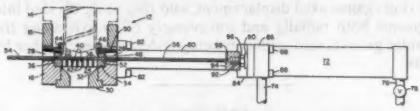
1. In a hollow fiber permeability apparatus comprising a housing having a permeating region, a bundle of permeable-wall hollow fibers disposed in parallel in said permeating region, means for supplying a first fluid flowing between the exteriors of said fibers, and another means for passing a second fluid through the interiors of fibers such that materials selectively permeate through the walls of said fibers, said permeating region having a flattened cross-section in the direction substantially perpendicular to the lengthwise direction of said fibers, first and second enlarged cross-section portions molded integrally with said housing at the opposite ends thereof, each of said enlarged cross-section portions defining compartments between said bundle and a wall of said housing, an inlet opening defined by said first enlarged cross-section portion for introducing said first fluid into said housing, and an outlet opening defined by said second enlarged cross-section portion for removal of said first fluid from said housing, tubular elements molded integrally with said housing and communicating with said inlet opening and said outlet opening for delivering said first fluid and for removal of said first fluid, the improvement wherein each of said enlarged cross-section portions are formed along substantially the whole lengths of both longer sides of the flattened cross-section of said permeating region and along at least one shorter side of said flattened cross-section, said tubular elements being formed adjacent said shorter sides of said flattened cross-section, and said tubular elements defining passages disposed substantially in parallel with said longer sides of said flattened cross-section, at least the major portion of the bundle surfaces positioned immediately opposite the interior walls defined by said first enlarged cross-section portion being exposed to said first fluid exiting from the passage of the tubular element delivering the first fluid whereby the first fluid has unimpeded entry between the fibers from said first enlarged cross section portion, said first enlarged cross-section portion comprising separate portions including two parts formed on opposite longer sides of said hollow fiber bundle, the volume ratio of one said part to the other said part ranging from 0.2 to 0.8, said second enlarged cross-section portion comprising separate portions including two parts formed on opposite sides of said hollow fiber bundle, the volume ratio of one said part to the other said part ranging from 0.2 to 0.8, said one part of said first enlarged cross-section portion being located at the same side of the permeating region as the other part of said second enlarged cross-section portion with the other part of the first cross-section portion being located at the same side of the permeating region as the first part of said second enlarged cross-section portion, said first fluid comprising a liquid, the volume ratio of said hollow fibers swelled with said liquid relative to the volume of said permeating region to be charged with said hollow fibers being in the range of 25 to 60 percent, and wherein said means for passing said second fluid through the interiors of said fibers includes a first cap with inlet means for said second fluid, said first cap being mounted at one end of said housing, and a second cap with outlet means for said second fluid, said second cap being mounted at the other end of said housing.

4,237,014

FLOWABLE MATERIAL PASSAGE WITH INTERPOSABLE SLIDE MEMBER

Delano B. Trott, Rowley, Mass., assignor to Beringer Co., Inc., Marblehead, Mass.

Filed Mar. 12, 1979, Ser. No. 19,159
Int. Cl.³ B01D *31/28;* B29F *3/00*
U.S. Cl. 210—330 **15 Claims**



1. Means for filtration of a flowable material comprising, in combination,

a body defining upstream and downstream passages and having a transverse filter channel and a closed annular flat first sealing surface defining a first opening communicating between one of said passages and said channel,

a seal member having a closed annular flat second sealing surface directly opposing said first sealing surface and defining a second opening opposing said first opening, said second opening communicating between the other of said passages and said channel,

a filter movable through the filter channel and comprising a flat bearing plate in slidable contact with one of said sealing surfaces and a filter sheet between the bearing plate and the other of said sealing surfaces,

means to move the filter from a first position to a second position relative to said openings, and

means urging the seal member and said filter toward one another and adapted to produce a sealing force therebetween which is constant and uniformly distributed over the contacting surfaces thereof at all positions of the filter in said movement, the bearing plate having a pattern of perforations covered by said filter sheet and dimensioned relative to the sealing surfaces so that at all positions of the filter in said movement, flow of material into said channel

through the perforations at the sealing surfaces is prevented and a substantially uniform and constant configuration of the filter is in communication with said passages.

4,237,015

FILTER UNITS

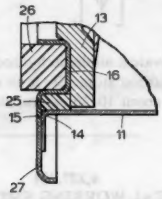
Robert Fearnhead, Worsley, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed May 1, 1979, Ser. No. 34,991

Claims priority, application United Kingdom, May 6, 1978, 18112/78

Int. Cl.³ B01D *27/08*

U.S. Cl. 210—444 **1 Claim**



1. A fluid filter unit comprising:
a canister;
a filter element housed within the canister;
an end plate located in the mouth of the canister for permanently retaining the element in the canister and providing means for detachably mounting the filter element into a fluid flow path;
a closing ring means joined to the end plate and having outer peripheral portions forming a seam joint with the mouth of the canister;
and a preformed elastomeric sealing ring located under axial and radial compression in a space defined by the internal surface of the canister mouth, the closing ring means and the end plate, said sealing ring thereby closing a leakage path past the radially outer periphery of the end plate to both the radially inner and outer peripheries of the closing ring.

4,237,016

TEXTILE CONDITIONING COMPOSITIONS WITH LOW CONTENT OF CATIONIC MATERIALS

Arthur L. Rudkin, Hitchin; John H. Clint, and Kenneth Young, both of Whitley Bay, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 27, 1978, Ser. No. 955,300

Claims priority, application United Kingdom, Nov. 21, 1977, 48376/77; Feb. 27, 1978, 7687/78; Apr. 3, 1978, 12926/78; May 30, 1978, 48376/77

Int. Cl.³ D06M *13/44, 15/02*

U.S. Cl. 252—8.8 **7 Claims**

1. A textile conditioning composition comprising:
(a) from about 0.3% to about 4% of a cationic surfactant selected from the group consisting of:
(1) non-cyclic quaternary ammonium salts having at least one C_{12-30} alkyl chain in the molecule,
(2) C_{8-25} alkyl imidazolinium salts, and
(3) mixture thereof;
(b) from about 2% to about 10% of a substantially water-insoluble nonionic textile conditioning agent selected from the group consisting of:
(1) C_{10-26} fatty acid esters of mono- or polyhydroxy alcohols containing 1 to 12 carbon atoms,
(2) esters of fatty alcohols having from 12 to 24 carbon atoms in the alkyl chain and mono- or polycarboxylic acids having from 1 to 8 carbon atoms in the alkyl chain, whereby the total number of carbon atoms in the ester is equal to or greater than 16, and
(3) mixtures thereof; and
(c) from about 0.05% to about 0.5% of a polymeric cationic salt comprising guar gum which has been rendered cationic by attaching a cationic group to it at one or more of its reactive hydroxyl or carboxyl sites;
wherein the weight ratio of (a)+(c) to (b) is less than 10:1.

4,237,017

STEAM FLOODING HYDROCARBON RECOVERY COMPOSITION

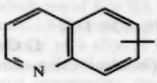
Joseph C. Allen, Bellaire, Tex., and John W. Porter, Metairie, La., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 826,446, Aug. 22, 1977, Pat. No. 4,133,384. This application Jan. 4, 1979, Ser. No. 870

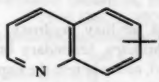
Int. Cl.³ E21B *43/24, 43/22*

U.S. Cl. 252—8.55 D **2 Claims**

1. A fluid comprising a mixture of steam and carbon dioxide containing from about 5 to about 40 percent by volume of carbon dioxide and from about 0.01 to about 0.10 weight percent of an interfacial tension reducer selected from the group consisting of a compound of the formula:



wherein r is an integer of from 2 to about 5, s is an integer of from 8 to about 60, wherein the sum of r plus s is not more than 55 and M is selected from the group consisting of hydrogen, sodium, potassium and the ammonium ion, and a compound of the formula:



wherein t is an integer of from 8 to about 40, and M has the same meaning as previously described.

4,237,018

SURFACTANT FLOODING OIL RECOVERY PROCESS

Vernon H. Schievelbein, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed May 7, 1979, Ser. No. 37,182

The portion of the term of this patent subsequent to Feb. 5, 1997, has been disclaimed.

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **7 Claims**

1. In a method of recovering petroleum from a subterranean permeable, petroleum-containing formation, said formation containing water having a salinity of at least 20,000 parts per million total dissolved solids, said formation being penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with the formation, comprising injecting an aqueous, saline, surfactant-containing fluid into the formation via the injection well to displace petroleum toward the production well, from which it is recovered to the surface of the earth, said fluid containing from 0.05 to 10.0 percent of a surfactant having the following formula:

$$RO(R'O)_nSO_3^-M^+$$

wherein R is an alkyl group, linear or branched, having from 9 to 25 carbon atoms, or an alkylaryl group, containing at least one alkyl constituent, linear or branched, containing from 9 to

15 carbon atoms, R' is ethylene or a mixture of ethylene and higher molecular weight alkylene with relatively more ethylene than higher molecular weight alkylene, n is a number including fractional numbers from 2 to 9, wherein the value of n is selected to achieve a fluid interfacial tension value less than 200 millidynes per centimeter, and M^+ is sodium, potassium, lithium or ammonium, the improvement for increasing the phase stability and injectability of the surfactant fluid, and improving its low surface tension oil displacement effectiveness, which comprises:

shearing the surfactant fluid at the surface at a shear rate of at least 150 reciprocal seconds for a period of time of at least 0.1 minutes, said shear rate and shear time being sufficient to reduce the turbidity of the fluid prior to injecting it into the formation via the injection well.

4,237,019

1-THIOCYANATO-8-SUBSTITUTED NAPHTHALENE COMPOUNDS AND THEIR USE AS BIOCIDES

Michael Singer, and Bernard Tury, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

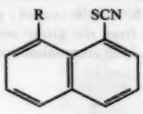
Filed Dec. 8, 1978, Ser. No. 968,433

Claims priority, application United Kingdom, Dec. 23, 1977, 53749/77

Int. Cl.³ C10M *1/20, 1/30, 1/38, 1/32*

U.S. Cl. 252—47.5 12 Claims

1. 1-Thiocyanato-8-substituted naphthalene compounds of the formula:



where R is alkyl, alkoxy, aryl, aryloxy, hydroxy, halogen, nitro, cyano, sulphonic acid, primary, secondary or tertiary amino, carbamoyl or sulphamoyl, and wherein the naphthalene nucleus may carry other substituents selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, halogen, nitro, amino, acylamino, sulphonic acid, sulphamoyl and thiocyanato.

4,237,020

LUBRICATING AND FUEL COMPOSITIONS CONTAINING SUCCINIMIDE FRICTION REDUCERS

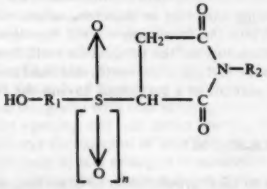
Andrew G. Papay, Manchester, and Joseph P. O'Brien, Kirkwood, both of Mo., assignors to Edwin Cooper, Inc., St. Louis, Mo.

Filed Aug. 20, 1979, Ser. No. 67,999

Int. Cl.³ C10M *1/38*

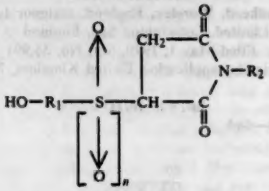
U.S. Cl. 252—47.5 10 Claims

1. A lubricating oil composition comprising an oil lubricating viscosity and containing a friction-reducing amount of an oil-soluble additive having the formula



wherein R_1 is a divalent aliphatic hydrocarbon group containing 1 to about 6 carbon atoms, R_2 is an aliphatic hydrocarbon group containing about 10–36 carbon atoms, and n is 0 or 1.

10. A liquid hydrocarbon fuel suitable for use in an internal combustion engine containing a friction-reducing amount of a fuel-soluble additive having the formula



wherein R_1 is a divalent aliphatic hydrocarbon group containing 1 to about 6 carbon atoms, R_2 is an aliphatic hydrocarbon group containing about 10–36 carbon atoms, and n is 0 or 1.

4,237,021

METAL WORKING EMULSION

Sune Andlid, and Lennart Linden, both of Karlshamn, Sweden, assignors to Karlshamns Oljefabriker, Karlshamn, Sweden

Filed Mar. 5, 1979, Ser. No. 17,084

Int. Cl.³ C10M *1/06*

U.S. Cl. 252—49.5 21 Claims

1. A metal working emulsion with good stability and unlimited dilutability for deforming metalworking, including machining by detachment of cuttings, deepdrawing and rolling, comprising an oil phase which is dispersed in a continuous water phase;

the oil phase comprising

0.5–50 parts by weight of triglyceride oil,

0.1–10 parts by weight of fatty acid monoglyceride,

0.05–10 parts by weight of fatty acid, and

0.05–10 parts by weight of alkanolamine or fatty amine;

and the water phase comprising

0.05–3 parts by weight of alkali soaps of fatty acids, and

45–98 parts by weight of water.

4,237,022

TARTARIMIDES AND LUBRICANTS AND FUELS CONTAINING THE SAME

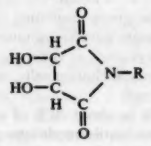
Daniel E. Barrer, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 924,016, Jul. 12, 1978, abandoned. This application Oct. 1, 1979, Ser. No. 80,595

Int. Cl.³ C10M *1/32;* C01L *1/22;* C07D *207/02*

U.S. Cl. 252—51.5 A 39 Claims

1. A composition of matter comprising one or more tartarimides represented by the formula



wherein R is an aliphatic-based or alicyclic-based radical of about 5 to about 150 carbon atoms or is R'OR'' in which R' is a divalent alkylene radical of 2 to 6 carbon atoms, and R'' is a hydrocarbyl radical of about 5 to about 150 carbon atoms, or R.

4,237,023

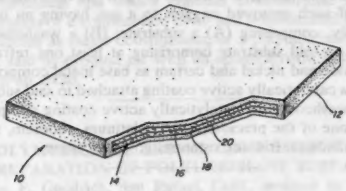
AQUEOUS HEAT-STORAGE COMPOSITIONS CONTAINING FUMED SILICON DIOXIDE AND HAVING PROLONGED HEAT-STORAGE EFFICIENCIES

Timothy E. Johnson, Newton Center, Mass., and John Giuffrida, Annandale, N.J., assignors to Massachusetts Institute of Technology, Cambridge and Cabot Corporation, Boston, both of, Mass.

Continuation-in-part of Ser. No. 961,161, Nov. 16, 1978, abandoned. This application Mar. 20, 1979, Ser. No. 22,232

Int. Cl.³ C09K 5/06

U.S. Cl. 252—70 21 Claims



1. In an aqueous heat-storage composition containing a phase-change material which absorbs and stores heat as it is heated above its phase-change temperature and releases stored heat as it is cooled below its phase-change temperature and a stabilizing agent to prolong heat-storage efficiency as the composition is repeatedly cycled through its phase-change temperature:

the improvement wherein said stabilizing agent comprises fumed silicon dioxide uniformly dispersed throughout said composition in a stable dispersion thereof.

4,237,024

DISHWASHING COMPOSITION AND METHOD OF MAKING THE SAME

Walter J. Fedechko, Williamstown, N.J., assignor to Certified Chemicals, Inc., Cinnaminson, N.J.

Filed Jun. 16, 1978, Ser. No. 916,407

Int. Cl.² C11D 7/54, 7/56

U.S. Cl. 252—99 21 Claims

1. A method of making an agglomerated dishwashing composition comprising the steps of:

(a) forming a composition mixture by mixing an aqueous solution of sodium hypochlorite at a rate of about 4 to about 25% per minute based on the total weight of any substantially dry ingredients in an amount sufficient to yield about 0.25 to about 1.6% available chlorine in the composition with at least one alkaline sequestrant builder salt, a water soluble carrier material and an alkali metal silicate having a SiO_2 to M_2O ratio of about 1:1 to about 3.22:1 wherein M is at least one alkali metal;

(b) agitating the composition mixture after adding the ingredients set forth in step (a) for a sufficient time to form agglomerated granules of the composition mixture; and

(c) conditioning the agglomerated granules by reducing the moisture content of agglomerated granules by about 0.25–5%.

4,237,025

PRODUCT COMPRISING LIME OR LIMESTONE AND GRAHAM'S SALT OR $M_xP_nO_{(3N+1)}$

Maher E. Tadros, Ellicott City, Md., assignor to Martin Marietta Corporation, Bethesda, Md.

Division of Ser. No. 901,164, Apr. 28, 1978. This application Sep. 25, 1978, Ser. No. 945,654

Int. Cl.³ C09K 3/00

U.S. Cl. 252—192 4 Claims

1. A new composition of matter consisting of lime or limestone and Graham's salt or a water soluble polymer of the formula $M_xP_nO_{(3n+1)}$, wherein M is a cation, n is a positive integer greater than 1, x is $(n+2)/y$, and y is the valence of M.

4,237,026

LIQUID CRYSTALLINE CARBOXYLIC ACID ESTERS

Rudolf Eidenschink; Joachim Krause, both of Dieburg, and Ludwig Pohl, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

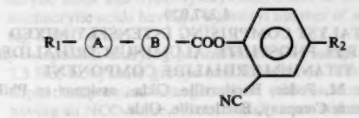
Filed Dec. 5, 1979, Ser. No. 100,599

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853728

Int. Cl.³ C09K 3/34; C02F 1/13; C07C 121/64

U.S. Cl. 252—299 8 Claims

1. A liquid crystalline carboxylic acid ester of the formula



in which one of A or B is 1,4-disubstituted phenyl and the other is trans-1,4-disubstituted cyclohexane and R_1 and R_2 are independently each alkyl of 1–10 carbon atoms.

5. In a liquid crystalline dielectric comprising two liquid crystal components, the improvement wherein at least one component is a compound of claim 1.

4,237,027

NOVEL BLACK LIGHT EMITTING LUMINOPHORS

Patrick Dougier, Marly-le Roi; Claude Fouassier, Gradignan, and Bertrand Latourrette, Gagny, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Oct. 2, 1979, Ser. No. 81,128

Claims priority, application France, Oct. 3, 1978, 78 28184

Int. Cl.³ C09K 11/46

U.S. Cl. 252—301.4 H 3 Claims

1. A luminophor having the formula:

$$Sr_{1-x}Eu_x^{2+}SiF_6{\cdot}2H_2O,$$

wherein $0<x\leqq 0.5$ said luminophor emitting a sharp line emission spectrum centered at about 3600 Å when excited by ultraviolet radiation having a wavelength of 2537 Å.

4,237,028

APPARATUS FOR PRODUCING EMULSIONS

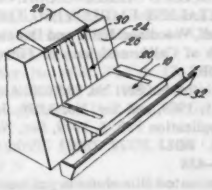
John F. Hughes, Southampton, and John M. C. Roberts, Camberly, both of England, assignors to National Research Development Corporation, London, England

Filed Aug. 29, 1978, Ser. No. 937,844

Claims priority, application United Kingdom, Sep. 8, 1977, 37556/77

Int. Cl.³ B05B 5/02; B01F 3/08; B01J 13/00

U.S. Cl. 252—359 B 15 Claims



1. Apparatus for producing an emulsion of a disperse phase material in a continuous phase material, the material being provided in fluid form, said apparatus comprising:

atomiser electrode means;
means enabling the electrode means to receive a flow of the disperse phase material;
carrier means providing an electrically conductive surface spaced apart from the electrode means;
coating means enabling the conductive surface to receive a coating of the continuous phase material, such that the material forms a thin layer, and
means for collecting the emulsion thus formed,
the electrode means being effective when raised to a suitable electric potential relative to the conductive surface to cause the formation of atomised droplets of the disperse phase material and the carrier means being so arranged and disposed that the coating of continuous phase material is progressively advanced in a path such that the droplets are entrained by the coating to form an emulsion.

4,237,029

CATALYST COMPRISING INTENSELY MIXED TRIARYL PHOSPHITE, ALUMINUM TRIHALIDE, TITANIUM TRIHALIDE COMPONENT

Lawrence M. Fodor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 29, 1979, Ser. No. 7,454
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **18 Claims**

1. A catalyst which forms on intensively mixing together TiX_3, AlX_3, and a triaryl phosphite wherein X is halide to form a first milled, dry component which first component is subjected to a heat treatment consisting essentially of raising the temperature of said first component while retaining said first component in the dry state and then combined with a cocatalyst organoaluminum compound of the formula R_nAlX_{3-n} in which R' is a hydrocarbon group containing from 1 to about 20 carbon atoms, X is a halogen atom and n is an integer of 1 to 3.

4,237,030

CATALYST FOR PURIFYING EXHAUST GAS FROM AN INTERNAL COMBUSTION ENGINE

Masaaki Noguchi, Nagoya; Tsuchio Bunda, Okazaki; Noboru Yamamoto, and Shigeo Soejima, both of Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi and Nippon Gaishi Kabushiki Kaisha, Nagoya, both of, Japan

Continuation of Ser. No. 655,894, Feb. 6, 1976, abandoned. This application Jul. 10, 1978, Ser. No. 923,202
Claims priority, application Japan, Mar. 13, 1975, 50-30698
Int. Cl.³ B01J *21/02, 21/04, 21/12, 23/42*
U.S. Cl. 252—432 **6 Claims**

1. A catalyst for purifying exhaust gas from an internal combustion engine comprising: a catalyst carrier characterized by having a total pore volume of 0.05–0.50 cc/g, and an average pore diameter of 0.05–0.05μ, and consisting mainly of over 80% by weight of α-alumina and less than 20% by weight of sintering promoter; and a catalyst consisting essentially of platinum catalyst material.

4,237,031

CRYSTALLIZED SILICA-ALUMINA COGEL AND CATALYST EMPLOYING THE SAME

Hamid Alifandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 935,628, Aug. 21, 1978, Ser. No. 3,793, Jan. 1, 1979, and Ser. No. 3,879, Jan. 17, 1979. This application Feb. 5, 1979, Ser. No. 9,487
Int. Cl.³ B01J *27/24, 27/02, 29/06;* C01B *33/26*
U.S. Cl. 252—438 **8 Claims**

1. An ammoniated silia-alumina gel having an SiO_2/Al_2O_3 molar ratio more than 1 and less than 3 and containing less than 0.3 equivalents of NH_4 cations per mole of Al_2O_3 in the gel and rare earth cations and a crystalline phase having "d" spacings according to Table 1.

4,237,032

CATALYSTS

William D. J. Evans, Newton; Robert J. Larbey, Bassingbourn, and Thomas I. Stewart, Melbourn, all of England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Jun. 6, 1978, Ser. No. 912,966
Claims priority, application United Kingdom, Jun. 8, 1977, 23913/77
Int. Cl.³ B01J *23/10, 23/64, 23/84, 23/58*
U.S. Cl. 252—462 **7 Claims**

1. A supported catalyst suitable for catalyzing oxidation and reduction processes in a gas and capable of removing oxygen from a gas containing an excess of oxygen and restoring at least a part of such removed oxygen to a gas having an oxygen deficiency, comprising (A) a substrate; (B) a washcoat as a support on said substrate comprising at least one refractory metal oxide and nickel and cerium as base metal components; and (C) a catalytically active coating attached to said substrate by said washcoat, said catalytically active coating comprising at least one of the precious metals platinum, rhodium, ruthenium, palladium, iridium, osmium, gold and silver.

4,237,033

PRETREATMENT OF MICROCARRIERS FOR CELL CULTURE

Edgar M. Scattergood, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 885,137, Mar. 10, 1978, abandoned. This application Apr. 23, 1979, Ser. No. 32,302
Int. Cl.³ C08L *89/00*
U.S. Cl. 260—6 **6 Claims**

1. A process of treating microcarrier beads to enhance their suitability as a surface for cell culture which comprises soaking the beads in heated fetal calf serum prior to culturing cells on the beads.

4,237,034

POLYAMIDE COMPOSITIONS CONTAINING CARBOXYLIC ACID METAL SALT AND ORGANOPHOSPHONIC ACID

Jiri Tomka, Harrogate, and Jack M. Ginn, St. Albans, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 463,144, Apr. 22, 1974, abandoned. This application May 6, 1976, Ser. No. 683,826
Claims priority, application United Kingdom, May 14, 1973, 22783/73; Sep. 20, 1973, 44131/73
Int. Cl.³ C08L *77/00, 77/02*
U.S. Cl. 260—18 N **21 Claims**

1. A method of producing an aliphatic polycarbonamide composition comprising intimately blending an organophosphonic acid of general formula

where R is an inert organic radical and a metal compound selected from the group consisting of metal salts of staturated or unsaturated carboxylic acids, metal oxides or hydroxides, with a polyamide under melt conditions, wherein the metal is selected from the group consisting of metals of groups 2A, 2B, 3B, 7A and 8 of the Periodic Table of Elements, as tabulated on page 30 of Advanced Inorganic Chemistry by Cotton and Wilkinson published in 1962 by Interscience Publishers, the concentration of organophosphonic acid is such as to give between 0.025 mole and 120 mole of phosphorus per 10^6 gram of the polycarbonamide composition and the concentration of metal compound present is such as to give between 0.025 mole and 120 mole of metal per 10^6 gram of the polycarbonamide composition.

4,237,035

EPOXY RESIN FROM BY-PRODUCT TAR FROM RESORCINOL PROCESS AND USE THEREOF

Shuichi Kanagawa; Kazunori Kawakami, both of Osaka, and Akira Shintani, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 29, 1979, Ser. No. 42,956
Claims priority, application Japan, Jun. 2, 1978, 53-66999
Int. Cl.[3] C08G *59/06*
U.S. Cl. 260—28 R 6 Claims

1. An epoxy resin obtained by reacting a by-product tar, which is produced as by-product in manufacturing resorcinol or resorcinol and hydroquinone via the hydroperoxide of m-diisopropylbenzene or of a combination of m- and p-diisopropylbenzenes and which contains m-substituted phenolic constituents or a combination of m- and p-substituted phenolic constituents as major constitutents, or a polymerization product of said by-product tar with an epihalohydrin in the presence of an alkali.

4,237,036

POLYMERIZABLE PREMIX COMPOSITION FOR PREPARATION OF POLYURETHANE SURFACES

Judson E. Goodrich, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 6, 1979, Ser. No. 46,133
Int. Cl.[3] C08L *91/00*
U.S. Cl. 260—28 R 5 Claims

1. A method for improving the storage stability of a polymerizable mixture comprising a high molecular weight diol component, a low molecular weight chain stiffener component and an asphalt component which comprises at least substantially increasing said stability by admixing into said mixture an effective amount to improve storage stability of at least one aliphatic polyamide resin having a molecular weight in the range of from about 3000 to 9000 and a softening point below 150° C., said resin being the condensation product of (1) at least one aliphatic polycarboxylic acid having a carboxyl group content in the range 2 to 8 and a carbon atom content in the range 10 to 72 and (2) at least one polyamine of the formula $(H(HN—R—NH)_xH$, wherein R is an alkylene radical having a carbon atom content in the range 2 to 5 and x is an integer in the range 1 to 5.

4,237,037

POWDER COATING COMPOSITION COMPOSED OF ETHYLENE RESIN MIXTURE AND HYDROCARBON WAX

Takao Takahashi, Iwakuni, Japan, assignor to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Apr. 3, 1979, Ser. No. 26,699
Claims priority, application Japan, Apr. 7, 1978, 53/40217
Int. Cl.[3] C08L *23/08*
U.S. Cl. 260—28.5 AV 8 Claims

1. A powder coating composition comprising

(A) 70 to 97% by weight of an ethylene resin mixture composed of

(A-1) an ethylene copolymer having an ethylene content of at least 70 mole percent ethylene, a melt index of 1 to 50 and containing at least one comonomer selected from the group consisting of alpha-olefins other than ethylene, dienes, vinyl acetate, vinyl alcohol, acrylic acid, methacrylic acid and functional derivatives of methacrylic acid, and

(A-2) a graft copolymer of polyethylene having grafted thereto an unsaturated carboxylic component, the amount of said unsaturated carboxylic component being 0.001 to 2% based on the weight of the ethylene resin mixture (A), and

(B) 3 to 30% by weight of a hydrocarbon wax having a number average molecular weight of about 400 to about 3,000 and a density of not less than 0.9 g/cm^3, said wax having an acid value of up to about 5 when modified by oxidation or graft-modified.

4,237,038

CATHODICALLY DEPOSITABLE RESINS AND PROCESS OF PREPARING SAME

Georgios Pampouchidis, and Helmut Hönig, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Oct. 12, 1978, Ser. No. 950,599
Claims priority, application Austria, Oct. 24, 1977, 7567/77
Int. Cl.[3] C08K *3/06;* C08G *18/77;* C25D *13/06*
U.S. Cl. 260—29.2 TN 18 Claims

1. Thermosetting binders characterized in that aqueous solutions thereof formed by neutralization with acids are cathodically depositable in an electrodeposition system comprising the reaction product of

(A) hydroxyl group containing polymerization products of monomers including alkyl esters of acrylic and methacrylic acids and hydroxyalkyl(ene) esters of acrylic and methacrylic acids having a hydroxyl number of at least 40 mg KOH/g; and

(B) compounds carrying per molecule an average of 0.8 to 1.5 free isocyanate groups and at least one tertiary basic aliphatically bound nitrogen atom; said reaction product having an NCO-value of substantially zero and containing basic functionality neutralizable with an inorganic or organic acid to provide an aqueous solution of said binders.

13. Aqueous compositions suitable for cathodic deposition in an electrodeposition system comprising the neutralized product of the reaction product of

(A) hydroxyl group containing polymerization products of monomers including alkyl esters of acrylic and methacrylic acids and hydroxyalkyl(ene) esters of acrylic and methacrylic acids having a hydroxyl number of at least 40 mg KOH/g; and

(B) compounds carrying per molecule an average of 0.8 to 1.5 free isocyanate groups and at least one tertiary basic aliphatically bound nitrogen atom;

said reaction product having an NCO-value of substantially zero.

4,237,039

SALTS OF ARYLALKANOIC ACIDS AS CORROSION INHIBITORS FOR POLY(ARYLENE SULFIDE)S

Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 18, 1978, Ser. No. 970,684
Int. Cl.[3] C08L *81/04*
U.S. Cl. 260—29.2 R 14 Claims

1. A poly(arylene sulfide) coating composition which comprises

(a) an arylene sulfide polymer,

(b) an ammonium or alkali metal salt of an arylalkanoic acid, and

(c) an aqueous medium.

4,237,040

SUSPENSION AGENT FOR SYNTHETIC RESIN POWDERS

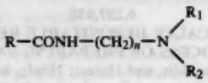
Anton Capelle, Delden, Netherlands, and Heinz Scholten, Haltern, Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 658,579, Feb. 17, 1976, abandoned.
This application Jan. 26, 1979, Ser. No. 6,874
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1975, 2507504
Int. Cl.[3] C08L *23/04, 33/24*
U.S. Cl. 260—29.2 N 10 Claims

1. An aqueous dispersion wherein there is contained:

I. a suspension agent in a concentration of about 1–7.5 percent by weight comprising a mixture of

(A) about 95–40 molar percent of an aminoamide of the general formula



wherein

R represents a saturated or unsaturated hydrocarbon group having 13–19 carbon atoms,

n represents an integer of between 2 and 6, and

R_1 and R_2 represent alkyl groups having 1–3 carbon atoms; and

(B) about 5–60 molar percent of an acid salt of said aminoamide; and

II. a concentration of about 25–50 percent by weight synthetic resin powders selected from the group consisting of polyvinyl resins and polyamide resins for spot coating garment interlinings having melting points not more than about 140° C.

4,237,041

PROCESS FOR PREPARING FILM-FORMING COMPOSITION

Sakhib M. O. Aliev, ulitsa Barinova, 12, blok 4, kv. 31; Vagab S. Aliev, ulitsa Nizami, 66, blok 5, kv. 40; Magira A. K. Agaeva, ulitsa Barinova, 12, blok 4, kv. 31; Tofik A. Gadzhiev, ulitsa Malygina, 17, kv. 16; Vagif B. G. O. Guseinov, ulitsa Meskheti, 4, kv. 2, and Zemfira A. B. K. Ismailova, ulitsa Bakikhanova, 26, kv. 14, all of Baku, U.S.S.R.

Filed Dec. 12, 1977, Ser. No. 859,869

Int. Cl.³ C08K *5/01*

U.S. Cl. 260—33.6 UA 17 Claims

1. A process for preparing a film-forming composition comprising co-oligomerization of arylalkenes with conjugated dienes at a weight ratio therebetween of from 1:1 to 4:1, respectively at a temperature ranging from 60° to 140° C. in a medium of a non-toxic hydrocarbon solvent selected from the group consisting of

(a) a petroleum fraction boiling within the range of 160° to 220° C. consisting of naphthenes, paraffins and aromatic hydrocarbons;

(b) a hydrogenate of a petroleum fraction boiling within the range of 160° to 220° C. obtained by catalytic hydrogenation at a temperature of 160°–180° C.; and

(c) naphthene hydrocarbons;

in the presence of a co-oligomerization initiator selected from the group consisting of organic peroxides and organic hydroperoxides; and in the presence of a molecular-weight control agent selected from the group consisting of

(i) products of diene condensation of conjugated dienes with cyclodienes,

(ii) a dehydrogenate of said products of diene condensation, and

(iii) a fraction with a boiling range between 160° and 220° C. recovered from liquid products of pyrolysis of gasoline at a temperature of 750°–850° C.,

whereby solvent removal and subsequent dissolution of the resulting co-oligomer is avoided.

4,237,042

POLYOLEFINS STABILIZED AGAINST LIGHT-INDUCED DEGRADATION

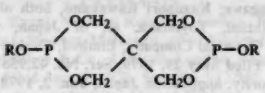
Joseph A. Stretanski, Clinton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 13, 1978, Ser. No. 951,230

Int. Cl.³ C08K *5/52*

U.S. Cl. 260—45.8 R 11 Claims

1. A light stable composition comprising a poly-α-olefin and from about 0.1 to 2.0 percent by weight thereof of a light stabilizer combination of (a) n-hexadecyl 3,5-di-t.butyl-4-hydroxybenzoate and (b) a dialkyl pentaerythrityl diphosphite represented by the formula:



wherein R is alkyl of 8 to 20 carbon atoms.

4,237,043

ORGANOTIN COMPOUNDS, THE PREPARATION AND USE THEREOF

Helmut Korbanka, Adelsried, and Franz Scheidl, Gersthofen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

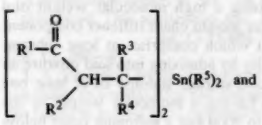
Filed Aug. 8, 1978, Ser. No. 931,897

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1977, 2735810

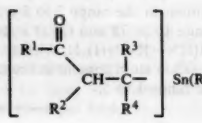
Int. Cl.³ C07F *7/22*

U.S. Cl. 260—45.75 S 5 Claims

1. Mixture of organotin compounds having the formula



I



II

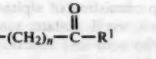
in which

R^1 is OH, $—NH_2$, an alkylamino or arylamino, O-alkyl or O-aryl, both the latter two being unsubstituted or substituted by aryl or alkyl said aryl or alkyl being unsubstituted or substituted by a member selected from the group consisting of halogen, hydroxy, thioether, ether, and carboxyl;

R^2 to R^4 are identical or different and each are

(a) 0 to 2 hydrogen atoms, or

(b) alkyl having from 1 to 30 carbon atoms, with the proviso that at least one is a



group, where R^1 is as defined above and

n an integer of from 1 to 15;

R^5 is $—S—(CH_2)m—CO_2—$alkyl, $—S—$alkyl, $—O_2C—$alkyl or $—O_2C—CH=CH—CO_2—$alkyl, m being 1 or 2 and the alkyl optionally contains —O—, —S— or $—CO_2$ groups and OH substituents;

and the R^1 to R^5 corresponding to one another in the components I and II of the mixture always being identical.

4,237,044

ANTIBODIES AGAINST CREATINEKINASE-M8 AND PROCESS FOR THE PRODUCTION THEREOF

Uwe Würzburg; Norbert Hennrich; Hans-Dieter Orth, and Hermann Lang, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 737,264, Nov. 1, 1976, abandoned. This application May 8, 1979, Ser. No. 37,191

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1975, 2548962

Int. Cl.[3] A61K *39/395;* C07G *7/00;* G01N *33/68*

U.S. Cl. 260—112 B 18 Claims

1. Antibodies having a molecular weight of 130,000–210,000 and a sedimentation constant between 6S and 8S; and being capable of effecting in creatinekinase-MM (CK-MM) and creatinekinase-MB (CK-MB) complete inhibition of enzymatic activity of the M subunit without inhibiting the enzymatic activity of the B subunit and without precipitation; wherein complete inhibition of the enzymatic activity of said M subunit of creatinekinase leaves less than 5 U./l. of said enzymatic activity intact, and non-inhibition of said enzymatic activity of said B subunit is less than 10 U./l., and wherein said antibodies are substantially free of creatinekinase-BB (CK-BB) isoenzyme activity; wherein said antibodies are prepared by the steps of activating a CK-MM antigen from skeletal muscle of humans, monkeys, pigs or cattle by an activator for —SH groups selected from the group consisting of N-acetylcysteine, mercaptoethanol, dithioerythritol, glutathione, cysteine, dithiothreitol, S-(2-aminoethyl)-isothiouronium bromide hydrobromide and thioglycolic acid or a divalent metal ion activator selected from the group consisting of magnesium, manganese, calcium and cobalt, or a mixture of activators; inoculating a goat with the thus-activated CK-MM antigen; withdrawing blood from the goat; and isolating said antibodies from the withdrawn blood.

4,237,045

N-SUBSTITUTED CYCLOPEPTIDE DERIVATIVES AND PREPARATION THEREOF

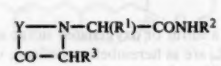
Amedeo Failli, St. Laurent; Hans U. Immer, Mount Royal, and Manfred K. Gotz, Hudson, all of Canada, assignors to American Home Products Corporation, New York, N.Y.

Filed Sep. 11, 1978, Ser. No. 941,827

Int. Cl.[3] C07C *103/52;* A61K *37/00*

U.S. Cl. 260—112.5 R 2 Claims

1. A process for preparing a compound of formula I



in which R^1 is lower alkyl, R^2 is lower alkyl or cyclo(lower)alkyl, R^3 is an amino acid side chain selected from hydrogen and lower alkyl and Y is a peptide residue of the formula NHCH(R^4)CH—NHCH(R^5)CO—NHCH(R^6)CO—NHCH(R^7)CO—NHCH(R^8)CO wherein R^4 is hydrogen, lower alkyl or benzyl; R^5, R^6, and R^7 each independently is hydrogen or lower alkyl and R^8 is hydrogen, lower alkyl or 2-(methylthio)ethyl, which comprises: condensing together an aldehyde of formula R^1CHO in which R^1 is as defined herein, an isonitrile of formula R^2NC in which R^2 is as defined herein and a peptide of formula H_2N-CH(R^3)—CO—Y—OH in which R^3 and Y are as defined herein.

4,237,046

POLYPEPTIDES AND METHODS OF PREPARATION

Miklos Bodanszky, 18035 Fernway Rd., Shaker Heights, Ohio 44122

Filed Apr. 27, 1979, Ser. No. 34,283

Int. Cl.[3] C07C *103/52;* A61K *37/00*

U.S. Cl. 260—112.5 R 16 Claims

1. A new polypeptide selected from the group consisting of those of the following general formulae:

(a) X-Met-Ala-Val-Lys-Lys-Tyr-Leu-Asn-Ser-Y-Leu-Z-X_1 wherein X is hydrogen, Gln, or pyroglutamyl; X_1 is OH or NH_2; Y is Val or Ile; and Z is Asn or Thr; and

(b) $(X)_{0-1}$-Met-Ala-Val-$(Lys)_{0-1}$-X_1 wherein X and X_1 are as described above.

4,237,047

PEPTIDE DERIVATIVE

Shumpei Sakakibara, Suita, Japan, assignor to Ajinomoto Company, Incorporated, Tokyo, Japan

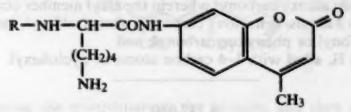
Filed Jul. 27, 1979, Ser. No. 61,422

Claims priority, application Japan, Aug. 10, 1978, 53-97579

Int. Cl.[3] C07C *103/52;* C07D *311/06*

U.S. Cl. 260—112.5 R 6 Claims

1. A peptide derivative having the formula



wherein R is a radical selected from the group consisting of hydrogen, glutamyl, isoleucyl-glutamyl, phenylalanyl-glutamyl, lysyl, glutamyl-lysyl, phenylalanyl-glutamyl-lysyl, leucyl, and valyl-leucyl.

4,237,048

MONOAZO DYESTUFF CONTAINING DI-CYANO SUBSTITUENTS ORTHO TO THE AZO GROUP

Alois Gottschlich, and Klaus Leverenz, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

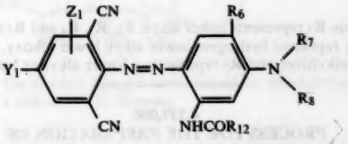
Division of Ser. No. 361,603, May 18, 1973, Pat. No. 3,962,209, which is a continuation of Ser. No. 28,247, Apr. 17, 1970, abandoned, which is a continuation of Ser. No. 615,898, Feb. 14, 1967, abandoned. This application Jan. 15, 1976, Ser. No. 649,253

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1966, 48454; Jan. 12, 1967, 51232

Int. Cl.[2] C09B *29/08, 29/26, 29/36*

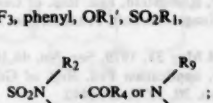
U.S. Cl. 260—207.1 5 Claims

1. Azo dyestuff of the formula



where

Y_1 is NO_2, CF_3, phenyl, OR_1', SO_2R_1,



R_{12} is NH_2, OCH_3, OC_2H_3, C_2H_5, CH_2OH, CH_2Cl, C_2H_4Cl or CH_2OCOCH_3;
R_6 is H, CH_3, OCH_3, or OC_2H_5;
R_7 and R_8 each are H, C_{1-4} alkyl, $—CH_2C_6H_5$, or substituted C_{1-4} alkyl wherein the substituents are OH, CN, OCH_3, Cl, $COOCH_3$, $COOC_2H_5$, $OCOCH_3$, $OCOOCH_3$ or OC_2H_4OH;
Z_1 is H or Cl;
R_1 is CH_3, C_2H_5, or phenyl; R_1' is CH_3, C_2H_5, C_2H_4OH, $C_2H_4OCOCH_3$, $C_2H_4OCH_3$ or CH_2COOCH_3;
R_2 and R_3 are H or CH_3;
R_4 is H, OH, R_1, OR_1 or

R_9 is formyl; alkyl carbonyl with 1–4 carbons in the alkyl group; substituted alkyl carbonyl with 1–4 carbons in the alkyl group wherein the substituents are OH, Cl, CN, NH_2, $OCOCH_3$ or $OCOC_2H_5$; phenyl carbonyl; substituted phenyl carbonyl wherein the phenyl radical is substituted with CH_3, Cl, NO_2 or OCH_3; benzyl carbonyl; methyl sulfonyl; phenyl sulfonyl; tolyl sulfonyl; amino carbonyl; amino carbonyl containing CH_3 or C_2H_5 substituents; alkoxy carbonyl wherein the alkyl member contains 1 to 2 atoms; benzyloxy carbonyl; phenylsulfonyl; methylsulfonyl or phenyloxycarbonyl; and
R_{10} is H, alkyl with 1–4 carbon atoms or cyclohexyl.

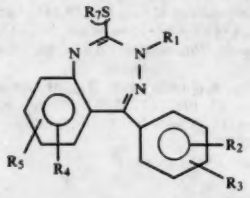
4,237,049

METHOD FOR PREPARING 6-PHENYL-TRIAZOLO OR IMIDAZOLO-(1,3,4)-BENZOTRIAZEPINES AND THE NOVEL INTERMEDIATES USED THEREWITH

Thomas C. Britton, and Donald L. Trepanier, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 818,683, Jul. 25, 1977, Pat. No. 4,144,233, and a continuation-in-part of Ser. No. 769,125, Feb. 16, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 951,914
Int. Cl.³ C07D *255/04*
U.S. Cl. 260—239 BD **1 Claim**

1. A compound of the formula



wherein R_1 represents lower alkyl; R_2, R_3, R_4 and R_5 independently represent hydrogen, lower alkyl, lower alkoxy, halo, or loweralkylthio; and R_7 represents a lower alkyl or benzyl.

4,237,050

PROCESS FOR THE PREPARATION OF WATER-SOLUBLE PHTHALOCYANINE DYESTUFFS

Hartmut Springer, Königstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 31, 1979, Ser. No. 44,158
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1978, 2824211; Feb. 20, 1979, 2906442
Int. Cl.³ C09B *47/08*
U.S. Cl. 260—242.2 **12 Claims**

1. In a process for the preparation of a water-soluble phthalocyanine dyestuff by reacting a phthalocyanine-sulfonic acid chloride or a phthalocyanine-sulfonic acid chloride containing sulfo groups, with a primary or secondary amine which contains one or several β-substituted ethylsulfonyl groups or one or several vinylsulfonyl groups, or with said amine and also a second primary or secondary amine of the aliphatic, heterocyclic or aromatic series, the improvement which comprises so reacting in the presence of a pyridine-sulfonic acid or a pyridine-carboxylic acid compound.

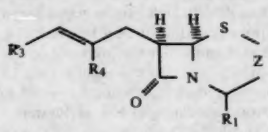
4,237,051

STEREOSPECIFIC PRODUCTION OF 6- OR 7-CARBON-SUBSTITUTED-β-LACTAMS

Stuart W. McCombie, West Orange, N.J., assignor to Schering Corporation, Kenilworth, N.J.

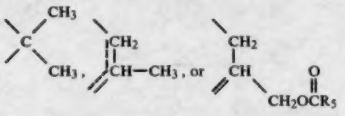
Filed Apr. 19, 1979, Ser. No. 31,286
Int. Cl.³ C07D *499/00, 501/02*
U.S. Cl. 260—245.2 R **11 Claims**

1. A process for the preparation of a β-lactam of the formula:

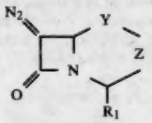


(I)

wherein
R^1 is cyano or $COOR_2$ wherein R^2 is a readily removable ester-forming moiety, hydrogen or an alkali-metal cation;
R^3 and R^4 are independently hydrogen, lower alkyl, aryl or aralkyl;
Z is a group of the formula

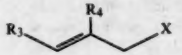


wherein R_5 is hydrogen, lower alkyl or aralkyl; and the dotted line indicates the optional presence of a double bond; which comprises
(1) reacting a diazo-β-lactam of the formula



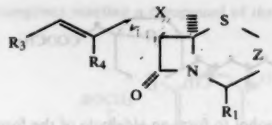
(II)

wherein Y is a sulfur or oxygenated sulfur atom, and Z, R_1, R_3, and R_4 are as hereinbefore defined; with an allyl halide of the formula



(III)

wherein R_3 and R_4 are as hereinbefore defined and X is bromo or iodo;
in the presence of a catalytic amount of metallic copper or a copper salt; and where Y is an oxygenated sulfur atom, followed by transformation of the resultant oxygenated sulfur intermediate to a compound wherein Y is a sulfur atom; and
(2) subjecting the resultant intermediate of the formula



(IV)

wherein X, Z, R_1, R_3, and R_4 are as hereinabove defined, to reduction with a trialkyl stannane to afford the compound of formula I.

11. The compound which is 6β-(aminomethyl)penicillanic acid.

4,237,052

METHOD FOR THE PREPARATION OF BITUMENS MODIFIED BY POLYMERS

Fredj Fitoussi, St. Genis Laval, and Paul Maldonado, St. Symphorien D'Ozon, both of France, assignors to Elf Union, Paris, France

Filed Feb. 15, 1979, Ser. No. 12,459
Claims priority, application France, Mar. 3, 1978, 78 06160
Int. Cl.[2] C08L *91/00*
U.S. Cl. 260—28.5 AS **12 Claims**

1. A process for the preparation of a bitumen-polymer composition comprising grafting, by heating in the presence of a catalyst, at a temperature of 180° C. for 3 hours, 5 to 10 parts of a dihalopolybutadiene polymer on to 100 parts of the bitumen, said polymer serving as a receptive structure for block polymers and to elastomers co-vulcanizable with the grafted bitumen.

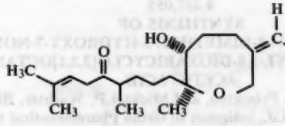
4,237,053

TOTAL SYNTHESIS OF THE UTERO-EVACUANT SUBSTANCE D,L-ZOAPATANOL

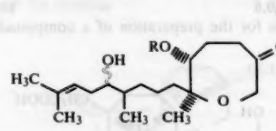
Vinayak V. Kane, Princeton, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Dec. 20, 1978, Ser. No. 971,471
Int. Cl.[3] C07D *313/04*
U.S. Cl. 260—333 **6 Claims**

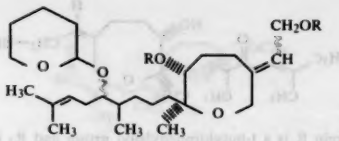
1. The process for the preparation of a compound of the formula



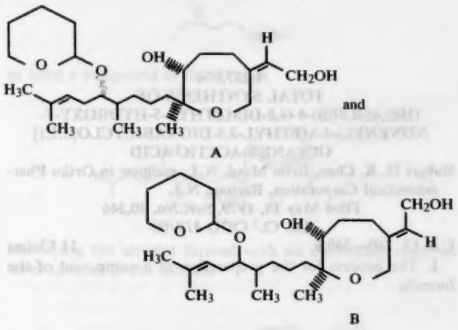
which comprises reacting a compound of the formula



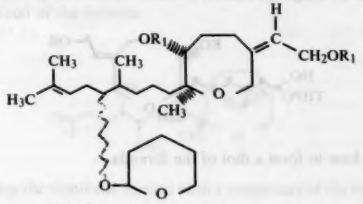
with dihydropyran in the presence of p-toluenesulfonic acid to form a compound of the formula



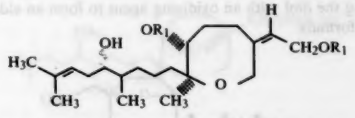
reacting the product formed with tetrabutylammonium fluoride to form a mixture of compounds of the formula



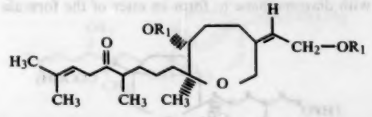
separating the compounds in the mixture, and then reacting compound A with an esterifying agent selected from a lower alkyl anhydride and a lower alkyl halide to form an ester of the formula



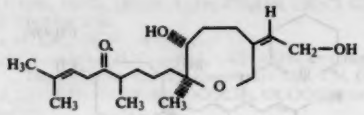
treating the product formed with an acid selected from acetic acid, p-toluenesulfonic acid and camphorsulfonic acid to form an alcohol of the formula



treating the alcohol formed with chromium trioxide/pyridine to form a ketone of the formula



and reacting the product formed with tetrabutylammonium hydroxide to form a compound of the formula



wherein R is a t-butyldiphenylsilyl group and R_1 is lower alkanoyl having 2–5 carbon atoms.

4,237,054

TOTAL SYNTHESIS OF (1RS,4SR,5RS)-4-(4,8-DIMETHYL-5-HYDROXY-7-NONENYL)-4-METHYL-3,8-DIOXABICYCLO[3.2.1] OCTANE-1-ACETIC ACID

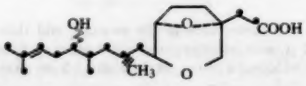
Robert H. K. Chen, Belle Mead, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed May 18, 1979, Ser. No. 40,346

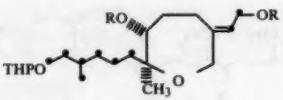
Int. Cl.³ C07D *319/00*

U.S. Cl. 260—340.6 **11 Claims**

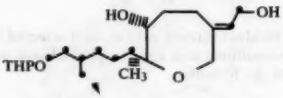
1. The process for the preparation of a compound of the formula



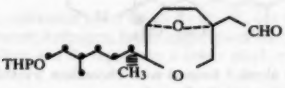
which comprises treating a compound of the formula



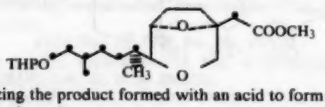
with a base to form a diol of the formula



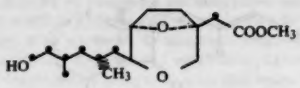
reacting the diol with an oxidizing agent to form an aldehyde of the formula



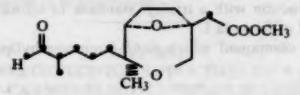
reacting the aldehyde with Jones reagent followed by treatment with diazomethane to form an ester of the formula



hydrolyzing the product formed with an acid to form an alcohol of the formula



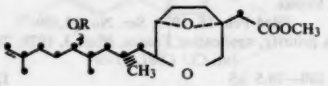
oxidizing the alcohol to form an aldehyde of the formula



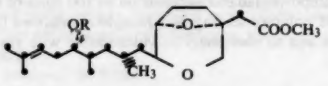
reacting the aldehyde with 3-methyl-3-butenyl magnesium bromide followed by reaction with an acid anhydride of the formula

$(R)_2O$

to form an ester of the formula

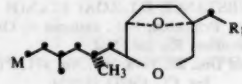


isomerizing the ester to form an isomer of the formula



and reacting the isomer with a base, wherein R is lower alkanoyl having 2–5 carbon atoms and THP represents a tetrahydropyranyl group.

8. A compound of the formula



wherein M is a tetrahydropyran-2-yloxy group or an hydroxy group and R_1 is a —$COOCH_3$ or CHO group.

4,237,055

SYNTHESIS OF 1RS,4SR,5RS-4-(4,8-DIMETHYL-5-HYDROXY-7-NONEN-1-YL)-4-METHYL-3,8-DIOXABICYCLO[3.2.1]OCTANE-1-ACETIC ACID

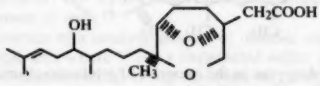
Zoltan G. Hajos, Princeton, and Michael P. Wachter, Bloomsbury, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jun. 18, 1979, Ser. No. 49,760

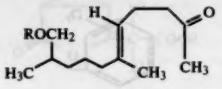
Int. Cl.³ C07D *319/00*

U.S. Cl. 260—340.6 **14 Claims**

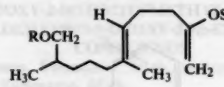
1. The process for the preparation of a compound of the formula



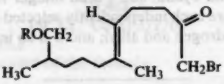
which comprises reacting a compound of the formula



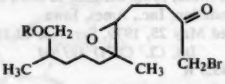
with lithium diisopropylamide followed by reaction with trimethylsilyl chloride in the presence of a base to form a compound of the formula



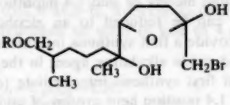
reacting the product formed with a brominating agent to form a compound of the formula



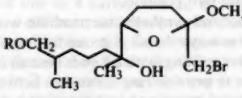
reacting the brominated product with a peracid to form a compound of the formula



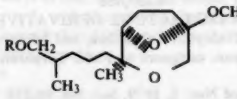
reacting the epoxide formed with acid to form a 5-membered ring hemiketal of the formula



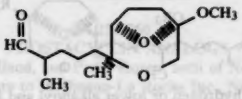
reacting the hemiketal with an alkylating agent to form a bromohydroxy acetal of the formula



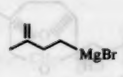
cyclizing the bromo tertiary alcohol to form a bicyclic oxidooxepane of the formula



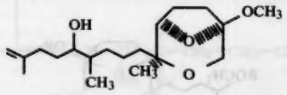
oxidizing the alcohol with an oxidizing agent to form an aldehyde of the formula



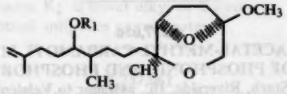
reacting the aldehyde with a Grignard reagent of the formula



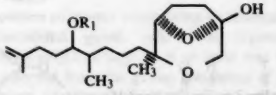
to form a compound of the formula



esterifying the alcohol formed with an esterifying agent to form an ester of the formula



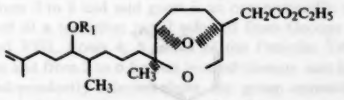
hydrolyzing the ketal with a hydrolyzing agent to form a hemiketal of the formula



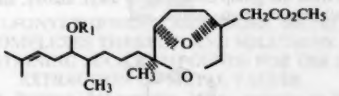
reacting the hemiketal formed with a compound of the formula

$(C_6H_5)_3P{=}CHCO_2C_2H_5$

to form a compound of the formula

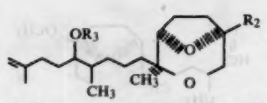


reacting the product formed with an isomerizing agent to form a compound of the formula



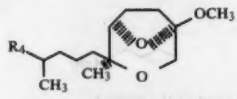
and reacting the product formed with an aqueous alcoholic base, wherein R is a benzyl or a t-butyldiphenylsilyl group and R_1 is lower alkanoyl.

12. A compound of the formula



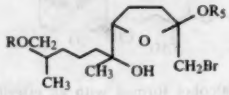
wherein R_3 is hydrogen or lower alkanoyl and R_2 is hydroxy, methoxy or carboethoxymethylene.

13. A compound of the formula



wherein R_4 is CH_2OH, CHO or $C_6H_5CH_2OCH_2$.

14. A compound of the formula



wherein R is benzyl or t-butyldiphenylsilyl and R_5 is hydrogen or methyl.

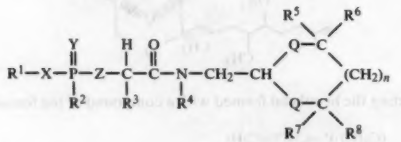
4,237,056

CYCLIC ACETAL-METHYL-CARBAMOYL-METHYL ESTERS OF PHOSPHONIC AND PHOSPHORIC ACID

Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jul. 26, 1979, Ser. No. 61,132
Int. Cl.³ C07D *319/04, 317/10*
U.S. Cl. 260—340.7 **16 Claims**

1. A compound of the formula



wherein X,Y and Z are each independently selected from the group consisting of oxygen and sulfur and Q is oxygen; R^1 is selected from the group consisting of alkyl, and

wherein A may be different at different positions and is selected from the group consisting of alkyl, alkoxy, alkylthio, halogen, nitro and cyano, and p is an integer from 0 to 5; R^2 is selected from the group consisting of alkyl, alkoxy, alkylthio, amino, alkylamino, dialkylamino and

wherein B may be different at different positions and is selected from the group consisting of alkyl, alkoxy, alkylthio, halogen, nitro and cyano, and q is an integer from 0 to 5; R^3 is selected from the group consisting of hydrogen, alkyl and

wherein D may be different at different positions and is selected from the group consisting of alkyl, alkoxy, alkylthio, halogen, nitro and cyano, and r is an integer from 0 to 5; R^4 is selected from the group consisting of hydrogen, alkyl, cycloalkyl and

wherein E may be different at different positions and is selected from the group consisting of alkyl, alkoxy, alkylthio, halogen, nitro and cyano, and s is an integer from 0 to 5; R^5, R^6, R^7, and R^8 are each independently selected from the group consisting of hydrogen and alkyl; and n is an integer from 0 to 3.

4,237,057

SYNTHESIS OF QUINONE PYRANO-GAMMA-LACTONE ANTIBIOTICS AND ANTIFUNGAL AGENTS

George A. Kraus, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 25, 1979, Ser. No. 42,314
Int. Cl.³ C07D *493/04*
U.S. Cl. 260—343.3 R **10 Claims**

1. A method of preparing quinone pyrano-gamma-lactones, said method comprising,

reacting, under anhydrous conditions, a two position functionally substituted 1,4 naphthoquinone with a two substituted acid labile alkoxy furan, said two position functionally substituted moiety of said 1,4 naphthoquinone being one which can be reduced to an alcoholic functional group to provide a first synthesis intermediate,

adding an acid stable alkylating agent in the presence of a base to said first synthesis intermediate to alkylate and protect the 1,4 position keto groups of said naphthoquinone,

reducing with a hydride the functional groups of said two position functionally substituted moiety to provide a second synthesis intermediate having alcoholic functional groups at said two position,

treating said second synthesis intermediate with a deblocking agent to remove the alkyl group from the alkoxy furan and thereafter treating with a Lewis base an internal cyclization agent to provide ring formation between said alcoholic functional group and said furan ring, and

thereafter, oxidatively dealkylating said 1,4 positions to provide a quinone pyrano-gamma-lactone.

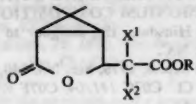
4,237,058

BICYCLIC LACTONE DERIVATIVES

Kiyoshi Kondo; Toshiyuki Takashima, and Minoru Suda, all of Kanagawa, Japan, assignors to FMC Corporation, Philadelphia, Pa.

Filed Nov. 1, 1979, Ser. No. 90,218
Int. Cl.³ C07D *307/93*
U.S. Cl. 260—343.3 R **1 Claim**

1. A compound of the formula



wherein X^1 and X^2 are the same or different and each is a halogen atom, a trichloromethyl group, or a trifluoromethyl group, and R is an alkyl group of 1 to 4 carbon atoms.

4,237,059

2-DECARBOXY-2-HYDROXYMETHYL-TRANS-2,3,4,5-TETRADEHYDRO-9-DEOXY-5,9α-EPOXY-PGF$_1$ COMPOUNDS

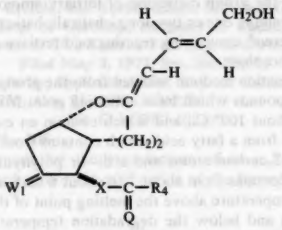
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 936,295, Aug. 23, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,461

Int. Cl.^{3} C07D *311/02*

U.S. Cl. 260—345.2 **8 Claims**

1. A 4Z compound of the formula



wherein W_1 is α-OH:β-H, α-H:β-OH, oxo, methylene, α-H:β-H, α-CH_2OH:β-H;

wherein Q is oxo, α-H:β-H, α-OH:β-R_8 or α-R_8:β-OH

wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; and

wherein R_4 is

(1) $—CR_5R_6—C_gH_{2g}—CH_3$

(2) $—CR_5R_6—Z$-(Ph)

(3) cis—CH_2—CH=CH—CH_2CH_3

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $—CR_5R_6—$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between $CR_5R_6—$ and the (Ph); wherein (Ph) is phenyl or phenyl substituted by (T)s, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $—OR_7$, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; and

wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) $—CH_2CH_2—$;

including the lower alkanoates thereof.

4,237,060

PROSTACYCLIN ANALOGS

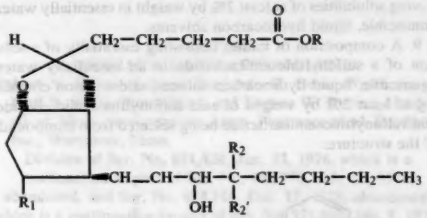
George W. Holland, and Perry Rosen, both of North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 23, 1979, Ser. No. 23,116

Int. Cl.^{3} C07D *307/935*

U.S. Cl. 260—346.22 **17 Claims**

1. A compound of the formula:



wherein R is hydrogen or lower alkyl; R_1 is lower alkyl; R_2 is hydrogen, lower alkyl or fluoro; and R_2' is fluoro, trifluoromethyl or lower alkyl; and the dotted bond is optionally hydrogenated and with the proviso that when R_2 is fluoro, R_2' is lower alkyl or fluoro

and their optical antipodes or racemates.

4,237,061

ORGANOMETALLIC INTERCALATES

Jack W. Johnson, Fanwood, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 2, 1979, Ser. No. 191

Int. Cl.^{2} C07F *7/00, 15/06*

U.S. Cl. 260—429.3 **13 Claims**

1. A composition of matter comprising an intercalation host and an intercalated guest, said host represented by $M(H_{1-y}A_yXO_4)_2.nH_2O$, where M is at least one tetravalent metal cation selected from the group consisting of zirconium, titanium, hafnium, cerium, thorium, tin, lead and germanium, A is at least one monovalent cation selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, ammonium and substituted ammonium of the formula $RR'R''R'''N^+$, where R, R', R'', and R''' are selected from the group consisting of hydrogen and hydrocarbon radicals, X is at least one element selected from the group consisting of phosphorus, arsenic and vanadium, "y" ranges from 0 to 1 and "n" ranges from 0 to 6 and said guest is an organometallic cation comprised of a transition metal selected from Groups IB to VIIB and VIII, Rows 4, 5 and 6 of the Periodic Table of Elements and from 2 to 6 ligands bonded thereto, said ligands being independently selected from the group consisting of unsaturated hydrocarbons, organophosphites, organophosphines, organoarsines, organic isocyanides, carbon monoxide, nitric oxide, hydride, halide, pseudohalide, alkyl and aryl.

4,237,062

SULFONYLTHIOSEMICARBAZIDES, METAL COMPLEXES THEREOF, AND SOLUTIONS CONTAINING SUCH COMPOUNDS FOR USE IN EXTRACTION OF METAL VALUES

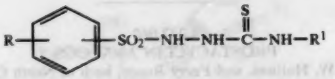
Ernest B. Spitzner, Minneapolis, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed May 21, 1979, Ser. No. 40,624

Int. Cl.^{3} C07F *3/06, 1/08, 15/04;* C07C *159/00*

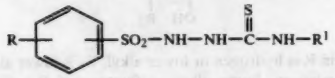
U.S. Cl. 260—438.1 **20 Claims**

1. Compounds of the structure:



wherein R is a linear or branched chain alkyl group containing at least 8 carbon atoms, and R^1 is selected from the group consisting of alkyl, aryl, alkaryl and aralkyl, in which the alkyl groups are linear or branched chain containing from 1 to 20 carbon atoms, said compounds being further characterized as having solubilities of at least 2% by weight in essentially water-immiscible, liquid hydrocarbon solvents.

9. A composition of matter consisting essentially of a solution of a sulfonylthiosemicarbazide in an essentially water-immiscible, liquid hydrocarbon solvent, said solution containing at least 2% by weight of said sulfonylthiosemicarbazide, said sulfonylthiosemicarbazide being selected from compounds of the structure:



wherein R is a linear or branched chain alkyl group containing at least 8 carbon atoms and R^1 is selected from the group consisting of alkyl, aryl, alkaryl and aralkyl, in which the alkyl groups are linear or branched chain containing from 1 to 20 carbon atoms.

18. The composition of claim **9**, wherein said composition additionally contains an amount of a metal complex of said sulfonylthiosemicarbazide and a metal ion selected from the group consisting of Cu^{++}, Ni^{++}, Co^{++}, Co^{+++}, and $Zn++$.

4,237,063

SYNTHESIS GAS CONVERSION

Weldon K. Bell, Pennington, and Clarence D. Chang, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 896,542, Apr. 14, 1978, abandoned. This application May 23, 1979, Ser. No. 41,956

Int. Cl.[3] **C07C** *1/02, 1/04, 27/06*

U.S. Cl. 260—449 R **7 Claims**

1. A method for the conversion of synthesis gas, which comprises a mixture of gaseous carbon oxides and hydrogen, to alcoholic products and hydrocarbons whereby water gas shift activity is increased, which comprises passing said synthesis gas at conversion conditions over a catayst comprising an effective amount of alumina and a metal cyano cuprate having the formula:

$$A_xB_y[Cu(CN)_4]$$

where the charge on the $[Cu(CN)_4]$ anion of said cuprate is -3; where A and B are the same or different and are selected from the group consisting of zinc, iron, cobalt, nickel, ruthenium, thorium, rhodium, zirconium, hafnium, chromium, iridium, osmium, copper, rhenium, tungsten, titanium, manganese, molybdenum, lanthanum, cerium, uranium, hydrogen, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium, and barium; and where x multiplied by the valence state of A plus y multiplied by the valence state of B equals $+3$.

4,237,064

PROCESS FOR PREPARING QUATERNARY AMMONIUM COMPOSITIONS

Richard A. Reck, Hinsdale, Ill., assignor to Akzona Incorporated, Asheville, N.C.

Filed Sep. 8, 1978, Ser. No. 940,532

Int. Cl.[3] **C07C** *141/04;* **C07F** *9/09*

U.S. Cl. 260—459 A **21 Claims**

1. A process for preparing a quaternary ammonium methylsulfate-containing composition from a tertiary amine selected from the group consisting of tertiary ammonium compounds containing one or two long-chain aliphatic groups, and mixtures thereof, comprising reacting said tertiary amine with dimethyl sulfate,

(a) in a reaction medium selected from the group consisting of compounds which have a melting point from about 0° C. to about 100° C., and which contain an ester linkage derived from a fatty acid which contains from about 8 to about 22 carbon atoms and a di- or polyhydric alcohol which contains from about 2 to about 6 carbon atoms,

(b) at a temperature above the melting point of the reaction medium and below the degradation temperature of the desired quaternary ammonium methyl sulfate;

(c) for a length of time sufficient to convert at least a portion of the tertiary amine to the desired quaternary ammonium methylsulfate.

3. A process for preparing a quaternary ammonium dimethyl phosphate-containing composition from a tertiary amine selected from the group consisting of tertiary ammonium compounds containing one or two long-chain aliphatic groups, and mixtures thereof, comprising reacting said tertiary amine with trimethyl phosphate,

(a) in a reaction medium selected from the group consisting of compounds which have a melting point from about 0° C. to about 100° C., and which contain an ester linkage derived from a fatty acid which contains from about 8 to about 22 carbon atoms and a di- or polyhydric alcohol which contains from about 2 to about 6 carbon atoms,

(b) at a temperature above the melting point of the reaction medium and below the degradation temperature of the desired quaternary ammonium dimethyl phosphate;

(c) for a length of time sufficient to convert at least a portion of the tertiary amine to the desired quaternary ammonium dimethyl phosphate.

4,237,065

PROCESS FOR THE PREPARATION OF N-PHOSPHONOMETHYL GLYCINE

Rodolphe Ehrat, Dinhard, Switzerland, assignor to Biological Chemical Activities Patents SA B.C.A.P., Luxembourg, Luxembourg

Filed Oct. 15, 1979, Ser. No. 84,532

Claims priority, application Switzerland, Oct. 27, 1978, 11133/78

Int. Cl.[3] **C07F** *9/38*

U.S. Cl. 260—502.5 **10 Claims**

1. A process for the preparation of N-phosphonomethyl glycine, wherein glycine is dissolved in an alcoholic solution of formaldehyde and a tertiary base, to the so obtained completed solution a dialkyl phosphite is added, the reaction mixture is subjected to an alkaline hydrolysis followed by an acidification whereupon the desired N-phosphonomethyl glycine is obtained by precipitation.

4,237,066
PREPARATION OF LOWER ALKYL THIOSEMICARBAZIDES

Danny B. Barton, Kansas City, Mo., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1978, Ser. No. 955,283
Int. Cl.³ C07C *159/00*
U.S. Cl. 564—18 **6 Claims**

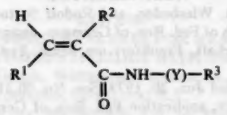
1. A process for the production of a lower alkyl-thiosemicarbazide comprising distilling off water from an aqueous solution containing hydrazine and an N-lower alkyldithiocarbamic acid quaternary ammonium salt at about 85° to 110° C. and under a pressure of about 700 to 900 mm Hg for a time less than about 2 hours but sufficient to remove substantially the stoichiometric amount of hydrogen sulfide thereby to effect pyrolysis while distilling off water, lower alkyl amine and hydrogen sulfide, and cooling the distilland to form crystals of lower alkyl-thiosemicarbazide.

4,237,067
PROCESS FOR THE MANUFACTURE OF α,β-UNSATURATED N-SUBSTITUTED CARBOXYLIC ACID AMIDES

Erich Küster, Krefeld; Bernhard Goossens, Velbert; Eduard Barthell, Krefeld, and Kurt Dahmen, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen & Cie., Krefeld, Fed. Rep. of Germany

Filed May 3, 1979, Ser. No. 35,756
Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819735; Aug. 21, 1978, 2836520
Int. Cl.³ C07C *102/00*
U.S. Cl. 564—205 **11 Claims**

1. A process for the manufacture of an α,β-unsaturated N-substituted carboxylic acid amide of the formula



in which

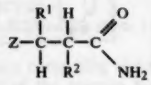
R^1 and R^2 are independently is H or CH_3,

Y is a divalent organic radical having 2–30 carbon atoms,

R^3 is H or a radical of the formula $-N(R^4)(R^5)$, and

R^4 and R^5 each independently is an alkyl radical having 1 to 4 carbon atoms,

comprising reacting an α,β-substituted carboxylic acid amid of the formula



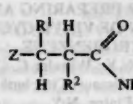
in which

Z is a hydroxy group or an alkoxy radical having 1 to 4 carbon atoms,

with an amine of the formula

$H_2N-(Y)-R_3$

at a temperature of about 100° to 200° C. with the elimination of ammonia thereby to form an N-substituted β-hydroxycarboxylic or β-alkoxycarboxylic acid amide of the formula



and heating such amide in the presence of a catalyst thereby to produce the corresponding α,β-unsaturated carboxylic acid amide.

4,237,068
PRIMARY AMINOACYLANILIDES

Robert N. Boyes, Auburn; Benjamin R. Duce, Westborough; Emil R. Smith, Shrewsbury, and Eugene W. Byrnes, Holden, all of Mass., assignors to Astra Pharmaceutical Products, Inc., Worcester, Mass.

Division of Ser. No. 651,420, Jan. 22, 1976, which is a continuation-in-part of Ser. No. 442,775, Feb. 15, 1974, abandoned, and Ser. No. 424,116, Dec. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 321,590, Jan. 8, 1973, and Ser. No. 321,800, Jan. 8, 1973, abandoned, each is a continuation-in-part of Ser. No. 167,031, Jul. 28, 1971, abandoned, said Ser. No. 442,775, is a division of Ser. No. 321,590, , which is a continuation-in-part of Ser. No. 167,031,.
This application Aug. 1, 1978, Ser. No. 929,916
Int. Cl.³ A61K *31/165*; C07C *103/38, 103/375, 103/50*
U.S. Cl. 260—562 N **14 Claims**

1. The compound 2-amino-2′,6′-propionoxylidide, and the pharmaceutically acceptable salts thereof.

4. The compound 2-amino-2′-ethyl-6′-methylpropionanilide, and the pharmaceutically acceptable salts thereof.

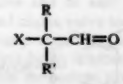
14. The compound 3-amino-2-methyl-2′,6′-propionoxylidide and the pharmaceutically acceptable salts thereof.

4,237,069
PRODUCTION OF ALPHA-HYDROXY OXIMES

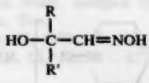
Harry E. Ulmer, Chesapeake, Va., and Chempolil T. Mathew, Randolph, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jul. 2, 1979, Ser. No. 54,205
Int. Cl.³ C07C *131/00*
U.S. Cl. 564—258 **11 Claims**

1. A process for producing an alpha-hydroxy-oxime which comprises reacting an alpha-halo-aldehyde of the formula



in aqueous media with an hydroxylamine-generating reagent at a pH between about 2 and about 9 to form the corresponding alpha-hydroxy-oxime of the formula



with R and R′ each being independently H, alkyl, aryl, alkyl-aryl or any of them substituted with hydroxy, Cl or Br and X being Cl or Br.

4,237,070

NOVEL PROCESS FOR PREPARING ANILINE BY CATALYTIC REACTION OF VINYL CYCLOHEXENE AND NITROBENZENE

John A. Patterson, Fishkill, N.Y.; Wheeler C. Crawford, Houston, and James R. Wilson, Missouri City, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 20, 1978, Ser. No. 944,041
Int. Cl.[3] C07C *85/11*
U.S. Cl. 260—580 18 Claims

1. The method which comprises

passing a charge stream containing vinyl cyclohexene and $R'NO_2$, wherein R' is alkyl, cycloalkyl, aryl, aralkyl, or alkaryl, into contact at hydrogen transfer conditions with a supported catalyst bearing (i) a Group VIII noble metal and, per mole of Group VIII noble metal, (ii) 1–20 moles of Group I B metal, present as oxide, and (iii) 0–20 moles of Group VI B metal present as oxide, thereby forming a product stream containing $R'NH_2$; and recovering said product stream containing $R'NH_2$.

4,237,071

OLEFIN OXIDATION PROCESS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 811,425, Jun. 29, 1977, Pat. No. 4,152,354. This application Dec. 29, 1978, Ser. No. 974,465
Int. Cl.[3] C07C *45/34*
U.S. Cl. 568—401 8 Claims

1. In a process for the conversion of the olefinic carbon-carbon double bonds of an olefinic hydrocarbon reactant to ketone carbonyl groups by contacting an olefinic hydrocarbon selected from the group consisting of (a) acyclic olefinic compounds containing 3–20 carbon atoms per molecule and having 1, 2, or 3 olefinic carbon-carbon double bonds per molecule and (b) cyclic olefinic compounds containing 5–20 carbon atoms per molecule and having 1, 2, or 3 olefinic carbon-carbon double bonds per molecule with a reaction system comprising:

oxygen;

a diluent comprising at least two liquid phases including an aqueous phase and an organic phase;

a catalyst comprising:

(1) palladium,

(2) copper, and

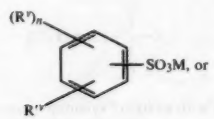
(3) an alkali metal or alkaline earth metal chloride; and a surfactant selected from the group of:

(1) quaternary ammonium salts of the general formula $(R'''')_4N^+X^-$,

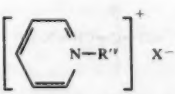
(2) alkali metal alkyl sulfates of the general formula R'^vOSO_3M,

(3) alkali metal salts of alkanoic acids of the general formula R'^vCO_2M,

(4) alkali metal salts of alkaryl sulfonic acids of the general formula



(5) 1-alkyl pyridinium salts of the general formula



wherein R''' is an alkyl radical of from 1 to 20 carbon atoms and wherein the total number of carbon atoms in said quaternary ammonium salt is from about 8 to about 30 carbon atoms; X^- is selected from the group consisting of Br^-, Cl^-, I^-, F^-, $R'''CO_2^-$, QSO_3^-, BF_4^-, HSO_4^- wherein Q is an aryl or alkaryl radical of 6 to 10 carbon atoms; R'^v is an alkyl radical of from 10 to about 20 carbon atoms; M is an alkali metal; R^v is an alkyl radical of 1 to 4 carbon atoms and wherein n is 0 or an integer of from 1 to 4,

whereby the reaction is conducted under such conditions of temperature and pressure that oxidation of the olefinic hydrocarbon reactant takes place, the improvement comprising using as said organic phase an alcohol having 3 to about 12 carbon atoms.

4,237,072

PREPARATION OF OPTICALLY ACTIVE CITRONELLAL

Paul Aviron-Violet, Saint-Genis Laval, and Tuan-Phat Dang, Lyon, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jun. 30, 1978, Ser. No. 920,981
Claims priority, application France, Jul. 4, 1977, 77 21377
Int. Cl.[3] C07C *47/20*
U.S. Cl. 568—459 18 Claims

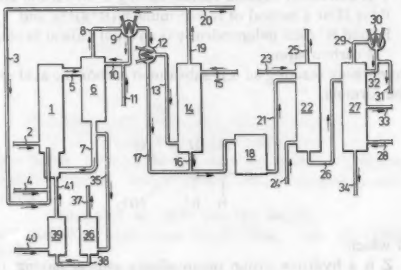
1. A process for the preparation of optically active citronellal by the asymmetrical hydrogenation of neral or geranial, comprising treating neral or geranial with hydrogen in a liquid reaction medium in the presence of an amount sufficient to catalyze the conversion of said neral or geranial to said optically active citronellal of an optically active catalyst consisting essentially of a complex which is soluble in the reaction medium and formed from a rhodium derivative and a chiral phosphine under a hydrogen pressure and at a temperature sufficient for hydrogenating the neral or geranial into the citronellal and for a period of time sufficient to convert substantially all of the neral or geranial into the citronellal.

4,237,073

PROCESS FOR THE MANUFACTURE OF ACETALDEHYDE

Walter Steppich, Wiesbaden, and Rudolf Sartorius, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 20, 1979, Ser. No. 50,313
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827380
Int. Cl.[3] C07C *47/07*
U.S. Cl. 568—401 5 Claims



1. In a process for the manufacture of acetaldehyde which includes reacting ethylene and oxygen in a reactor in the presence of an aqueous solution of palladium and copper chloride at a temperature of 100° to 150° C. and a pressure of 1.0 to 6.0 atmospheres to form a gaseous mixture, continuously regenerating a portion of said solution by heating said solution outside

of the reactor, cooling the gaseous mixture to form a condensed and noncondensed portion, recycling the condensed portion to the reactor, adding water to either the condensed portion or directly to the reactor in an amount approximately equal to the amount of water present in the noncondensed portion, washing the noncondensed portion with water to form an aqueous acetaldehyde solution, separating the aqueous acetaldehyde solution by an extractive distillation step using water as an extraction agent and further separating the bottoms product of said extractive distillation step by a second distillation step to obtain substantially pure acetaldehyde as an overhead product and waste water as a bottoms product, the improvement comprising recycling a portion of the waste water to satisfy the water demand required to wash the noncondensed portion of the gaseous mixture and discharging any residual waste water.

4,237,074

ISOMERIZATION OF DICHLOROBUTENES

Higashi Ito, and Seiichi Watanabe, both of Ohmimachi, Japan, assignors to Denkyi Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 941,685, Sep. 12, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 63,257

Claims priority, application Japan, Sep. 30, 1977, 52-116879; Sep. 30, 1977, 52-116880

Int. Cl.³ C07C *17/00*

U.S. Cl. 570—236 **5 Claims**

1. In an isomerization reaction between 3, 4-dichlorobutene-1 and 1, 4-dichlorobutene-2 in the presence of a catalyst at 80° to 130° C., the improvement comprising:

conducting the isomerization reaction in the presence of a cuprous chloride-1,3-diphenylguanidine or cuprous chloride-di-o-tolylguanidine catalyst or mixtures thereof.

4,237,075

FORMAMIDE CATALYSTS FOR REACTING PHOSPHORUS HALIDES WITH THIOLS

Stanley T. D. Gough, Whitehouse Station, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 653,069, Jan. 28, 1976, abandoned, which is a continuation of Ser. No. 536,512, Dec. 26, 1974, abandoned. This application Jun. 5, 1979, Ser. No. 45,800

Int. Cl.³ C07F *9/16, 9/165, 9/40, 9/46*

U.S. Cl. 260—976 **6 Claims**

1. In the process for preparing esters of phosphorous acid, phosphonous acid, or phosphinous acid, which process comprises:

(A) reacting a compound having the formula R_nPCl_{3-n}, wherein R is alkyl (C_1–C_6), alkoxy (C_1–C_6), or alkylthio (C_1–C_6) and n is 0–2; with

(B) an alkanethiol (C_1–C_6);

(C) at a temperature of between about 15° C. and about 100° C;

(D) the improvement comprising virtually eliminating the induction period of the reaction by carrying out said process in the presence of a catalyst comprising a formamide having the formula:

wherein R′ and R″ are the same or different and are H or alkyl (C_1–C_3).

4,237,076

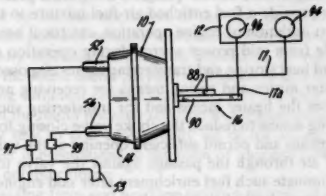
TWO STAGE VACUUM BREAK

Benjamin C. Benjamin, Flint, and Leon F. LaVene, Durand, both of Mich., assignors to Schmelzer Corporation, Durand, Mich.

Division of Ser. No. 776,533, Mar. 11, 1977, Pat. No. 4,181,065. This application Mar. 29, 1979, Ser. No. 24,967

Int. Cl.³ B01D *47/00*; F01B *19/00*

U.S. Cl. 261—23 A **4 Claims**



1. A charge forming system for an internal combustion engine comprising; a carburetor, a choke valve in the carburetor, said choke valve normally being urged to a closed position, a fluid motor connected to the choke valve and adapted to move it from a closed position toward an open position at a controlled rate, said fluid motor including a primary housing, an auxiliary housing disposed in said primary housing, a diaphragm, said diaphragm having a primary portion supporting said auxiliary housing for movement in said primary housing and forming a first vacuum chamber at one side and a first atmospheric pressure chamber at the other side of said auxiliary housing and primary diaphragm portion, said diaphragm having an auxiliary portion in said auxiliary housing forming a second vacuum chamber at one side and a second atmospheric pressure chamber at the other side of said auxiliary portion of said diaphragm, said first and second atmospheric pressure chambers being in constant communication with each other and said first and second vacuum chambers being isolated from each other, an output member connected to said choke valve and to said auxiliary portion of said diaphragm, resilient means urging said diaphragm and operatively connected choke valve to a closed position, said first vacuum chamber being connected to a first source of manifold vacuum pressure and said second vacuum chamber being connected to a second source of manifold vacuum pressure, means associated with said sources to communicate vacuum pressure to a selected one of said first and second vacuum chambers to move said output member and operatively connected choke valve from a closed position to an intermediate open position and to the other of said vacuum chambers to move said output member and choke valve from said intermediate open position toward a fully open position, a second choke valve normally being urged to a closed position, and an additional output member connected to said second choke valve and to said auxiliary housing for movement of said second choke valve to an open position upon establishment of vacuum pressure in said first vacuum chamber, said output members being disposed in parallel adjacent relation to each other for movement simultaneously and independently of each other.

4,237,077

AUTOMATIC CHOKE SYSTEM

Peter G. Berg, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

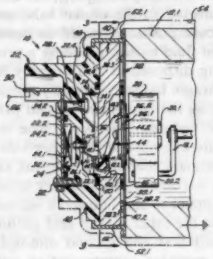
Filed Aug. 29, 1978, Ser. No. 937,896

Int. Cl.³ F02M *1/12*

U.S. Cl. 261—39 E **13 Claims**

1. In combination with an internal combustion engine having air-fuel portions which warm above a selected temperature during engine operation and assure full vaporization of the fuel in an air-fuel mixture being furnished to the engine and which tend to cool below that temperature within a delay period after

termination of engine operation, an electrical power source, and a carburetor having an air-fuel induction passage furnishing an air-fuel mixture to the engine and having an unbalance-mounted, air-movable choke valve mounted for variable movement across the passage to control air flow through the passage, a choke control system comprising thermostatic spring means urging the choke valve toward a closed position in the passage with a force increasing as a function of decreases in the temperature of the spring means from a predetermined level to provide a fuel enriched air-fuel mixture to the engine on a first initiation of engine operation, electrical heater means operable from said power source during operation of the engine, and heat storing and transferring means disposed between the heater means and spring means for receiving and storing heat from the heater means and for transferring such heat to the spring means to reduce the choke valve closing force of the spring means and permit sufficient opening of the valve by the flow of air through the passage against the valve to substantially eliminate such fuel enrichment after said engine portions have become heated to said selected temperature, said heat storing and transferring means having sufficient heat storage capacity to continue to transfer heat to the spring means for a time after termination of engine operation so that for a major



part of said delay period the spring means are maintained at a temperature preventing any substantial fuel enrichment of the air-fuel mixture on a restarting of the engine, said heater means comprising a first heater device operable on initiation of engine operation, a second heater device, and thermally responsive switch means actuable above a predetermined ambient temperature to operate the second heater device, said heat storing and transferring means having one side lying along said spring means to transfer heat to the spring means, having a first surface portion with a selected spacing from said one side having said first heater device secured in heat-transfer relation thereto defining a first heat-transfer path of a selected length between the first heater device and the spring means for initiating heat transfer to the spring means with a selected delay after the initiation of engine operation when ambient temperature is below said predetermined ambient temperature, and having a second surface portion with a relatively much smaller spacing from said one side having said second heater device secured in heat transfer relation thereto defining a second, relatively much shorter heat-transfer path between the second heater device and the spring means for initiating heat-transfer to the spring means promptly after the initiation of engine operation when ambient temperature is above said predetermined ambient temperature.

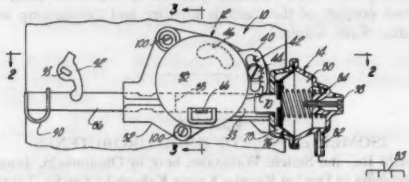
4,237,078

CARBURETOR CHOKE CONTROL

Benjamin C. Benjamin, Flint, Mich., assignor to Schmelzer Corporation, Durand, Mich.

Filed Jun. 11, 1979, Ser. No. 47,361
Int. Cl.³ F02M 1/12
U.S. Cl. 261—39 B **7 Claims**

1. A choke control mechanism for regulating the choke of a carburetor on an internal combustion engine comprising; a housing formed of plastic material and forming adjacent closed cavities in said housing, a bimetal coil in one of said cavities having one end connected to said choke and the other end connected to a metal plate member, said plate member being disposed in said housing for limited rotation to coil or uncoil said bimetal coil, an arm connected to said plate member and protruding from said cavity to the exterior of said housing for rotating said plate member to selected positions while said housing remains stationary, an electric heating element within said housing and positioned on said metal plate member adjacent to said bimetal coil, circuit means connected to said heater means for heating the latter, said circuit means including one terminal in fixed position on the exterior of said housing during



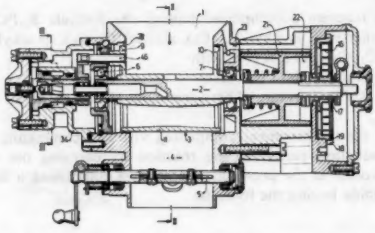
rotation of said plate relative to said housing and electrically connected to said metal plate member, a fastening means forming part of said circuit means for releasably holding said arm in selected positions and grounding said plate member electrically to said carburetor, said bimetal coil being operative to urge said choke to a closed position when the engine is relatively cold and not operating with a force inversely proportional to engine temperature and to urge said choke to an open position in response to heat from said engine and from said heating element, a diaphragm supported in the other of said cavities and responsive to a source of vacuum created when said engine is operating to move said choke valve from said closed position to a partially open position in opposition to the closing force of said bimetal coil.

4,237,079

FUEL SUPPLY DEVICE

Max Greiner, Gerlingen; Klaus J. Peters, Affalterbach; Peter Schelthas, Stuttgart; Peter Stiefel, Ditzingen, and Hermann Nusser, Asperg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 901,673, May 1, 1978, abandoned. This application Dec. 19, 1979, Ser. No. 105,437
Claims priority, application Fed. Rep. of Germany, May 6, 1977, 2720335
Int. Cl.³ F02M 9/08
U.S. Cl. 261—44 A **6 Claims**



1. A fuel supply system for a mixture-compressing, externally ignited internal combustion engine having an air intake manifold for conducting a flow of combustion air, an arbitrarily activatable throttle member in said air intake manifold, an air metering member in said air intake manifold upstream of

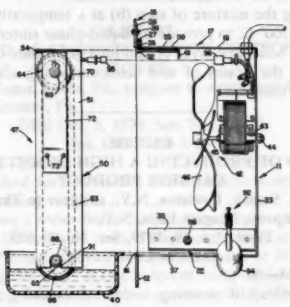
said throttle member for metering the quantity of air aspirated by said internal combustion engine, a fuel metering device for delivering a metered quantity of fuel proportional to the aspirated air quantity to said air metering member for mixing with said quantity of aspirated air, an air line connected to said air intake manifold upstream of said air metering member and to said fuel metering device for adding air to the metered fuel delivered to said air metering member and a filter having a fine-meshed web disposed upstream of the connection between said air line and said fuel metering device, said filter being adapted for filtering the flow of air therethrough and being impervious to fuel so as to prevent the reverse flow of fuel.

4,237,080

HUMIDIFIER ASSEMBLIES

Richard D. Elliott, Marietta, Ohio, assignor to Skuttle Mfg. Co., Marietta, Ohio

Filed Jan. 11, 1979, Ser. No. 2,794
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—80 **8 Claims**



1. A removable humidifier subassembly comprising a frame having a front member and parallel side members, generally parallel upper and lower rollers extending between said side members, motor means on the outer side of one of the side members for driving the upper roller, means in the lower ends of the side members mounting the ends of the lower roller for free rotation, an endless pad of water pickup material mounted on said rollers and adapted to be driven by the motor operated upper roller, and said front member being apertured sufficiently to allow passage of air therethrough and through the pad intermediate said rollers, and substantially horizontal slide members on the upper end of said frame extending oppositely laterally outwardly from the upper ends of said side members above the level of said upper roller adapted for slidable interfit with sockets in a supporting housing for removably mounting the subassembly in said housing.

4,237,081

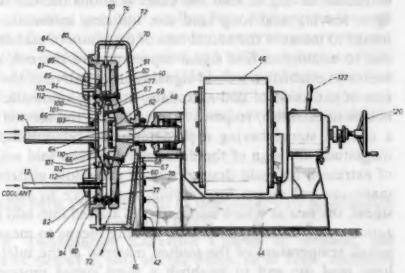
METHOD FOR PREPARATION OF FIBRILS

Clarence R. Murphy, Houston, Tex.; Robert E. Boehme, deceased, late of Houston, Tex.; by Helen J. Boehme, legal representative, Kalamazoo, Mich., and by Joseph P. Phelp, executor, Norristown, Pa., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Apr. 3, 1978, Ser. No. 892,799
Int. Cl.³ C08G *51/21;* **B24D** *3/00*
U.S. Cl. 264—9 **6 Claims**

1. A process for the continuous manufacture of olefin polymer fibrils in a disc mill provided with one stationary disc and one rotatable disc, each of which carries a plurality of protuberances on its working face, said discs being closely positioned to each other to define an annular working cavity therebetween, said mill being further provided with a central liquid reservoir adapted to feed liquid to the annular working cavity, said process consisting essentially of:

a. Feeding a hot viscous olefin polymer solution into said central liquid reservoir;
b. Maintaining the temperature in said central liquid reservoir sufficiently high to maintain substantially all of the olefin polymer in solution;
c. Rotating said rotatable disc so as to feed hot olefin polymer solution from said central reservoir into said working cavity and through a plurality of tortuous liquid paths defined by the protuberances of the disc faces whereby the olefin polymer solution is broken up into a plurality of uniaxially oriented streams and attenuated to uniaxially orient the solute olefin polymer molecules in said streams;
d. Feeding sufficient coolant liquid into said working cavity to cool the olefin polymer solution to a temperature sufficiently low so that substantially all of the solute olefin polymer is precipitated in the form of uniaxially oriented olefin polymer fibrils;
e. Discharging from said working cavity a mixture of uniaxially oriented olefin polymer fibrils, olefin polymer solvent, and coolant liquid; and
f. Recovering the olefin polymer fibrils from the mixture discharged in step (e);



the olefin polymer solution employed in step (a) being at a temperature of at least 100° C. and having a viscosity of at least 50 centipoises; said olefin polymer having an intrinsic viscosity of at least 3.5 and being selected from the group consisting of:

a. An olefin polymer selected from the group consisting of:
   (1) an ethylene homopolymer,
   (2) A copolymer containing at least 90 weight % of polymerized ethylene and the balance a polymerized olefin hydrocarbon containing at least 4 carbon atoms,
   (3) a propylene homopolymer, and
   (4) a copolymer containing at least 50 weight % of polymerized propylene and the balance polymerized ethylene;
b. A mixture of olefin polymers of (a), and
c. A mixture of polymers containing at least 20 weight % of an olefin polymer of (a) and up to 80 weight % of a diluent polymer that is soluble at 100° C. in the solvent employed in step (a);

the solvent included in the polymer solution employed in step (a) being a hydrocarbon or a chlorinated hydrocarbon, being a liquid at ambient temperature and having an atmospheric boiling point of at least about 150° C.; and the coolant liquid employed in step (d) being water or the solvent included in the polymer solution employed in step (a).

4,237,082

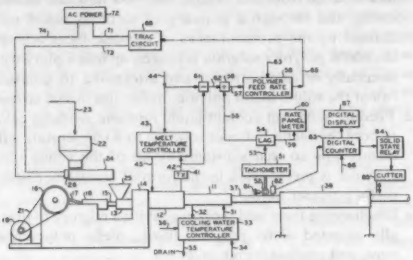
AUTOMATIC CONTROL OF EXTRUSION RATE

Ronald J. LaSpisa, Bartlesville, Okla., and Richard F. Giles, Pinch, W. Va., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 666,283, Mar. 12, 1976, Pat. No. 4,120,630. This application Oct. 4, 1978, Ser. No. 948,605

Int. Cl.[3] B29F *3/08*

U.S. Cl. 264—40.6 6 Claims



2. A method comprising feeding particles into a plasticization zone; heating said particles in said plasticization zone to provide molten material; passing the thus produced molten material through a long land die and removing heat from said material passing through said long land die to produce an extrudate having at least the outer portions thereof solidified upon leaving said long land die; utilizing automatic sensing means to measure the actual rate of extrusion of said extrudate and to establish a first signal representative thereof; utilizing means to establish a second signal representative of the desired rate of extrusion of said extrudate; utilizing automatic control means to establish, responsive to said first and second signals, a control signal having a predetermined relationship to the magnitude and sign of the difference between said actual rate of extrusion and said desired rate of extrusion; utilizing automatic control means for varying, responsive to said control signal, the rate at which said particles are fed into said plasticization zone; utilizing automatic sensing means to measure the actual temperature of the molten material at the inlet of said long land die and to establish a third signal representative thereof; utilizing means to establish a fourth signal representative of the desired temperature for the molten material at the inlet of said long land die; and utilizing automatic control means to manipulate, responsive to the difference between said third and fourth signals, the heating of the particles in said plasticization zone.

4,237,083

PROCESS OF MANUFACTURING A MICROPOROUS SHEET MATERIAL

James Young; Charles H. Geissel, both of Corvallis, and Piotr Zenczak, Philomath, all of Oreg., assignors to Evans Products Company, Portland, Oreg.

Continuation of Ser. No. 865,413, Dec. 29, 1977, abandoned. This application Feb. 13, 1979, Ser. No. 11,900

Int. Cl.[3] B29D *27/00*

U.S. Cl. 264—41 14 Claims

1. A process of manufacturing a microporous sheet comprising: plasticating a blend comprising a polyolefin selected from the group consisting of homopolymers and copolymers of ethylene, propylene and buylene, and mixtures thereof; finely divided silica; and a substantially water-insoluble plasticizer selected from the group consisting of dialkyl phthalates and dialkyl adipates having between about two to eleven carbon atoms in the oxo-alcohol moiety; forming a sheet from the plasticated blend; and contacting the sheet with water for a period of time sufficient to remove an amount of the plasticizer from the sheet sufficient to render the sheet microporous.

4,237,084

METHOD OF PRODUCING INTERNAL BOUNDARY LAYER CERAMIC COMPOSITIONS

David A. Payne, Champaign; Sang M. Park, Urbana, both of Ill., and Otto C. Jahnke, El Cajon, Calif., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Mar. 26, 1979, Ser. No. 23,708

Int. Cl.[3] H01B *3/12*; C04B *35/46, 35/64*

U.S. Cl. 264—61 5 Claims

1. A method of producing a fine-grained ceramic composition comprising the steps of:

(a) calcining at a temperature of about 1000–1400° C. about 90–99.99% by weight of a fine particle size polycrystalline alkaline earth metal titanate with about 0.01 to 10% by weight of a hexavalent metal oxide having the formula $(MO_3)(Bi_2O_3)_x$, where M is tungsten or molybdenum and x is 0.0–7, whereby said titanate is rendered semiconducting;

(b) mixing the product of step (a) with about 0.01–35% by weight of a lead germanate composition having the formula $(PbO)_x(GeO_2)_{y-z}(SiO_2)_z$, where x is 1–6, y is 1–3, and z is 0.0–0.75y; and

(c) firing the mixture of step (b) at a temperature of about 850–1300° C. to provide by liquid-phase sintering an insulating boundary layer of said lead germanate composition about the grains of said semiconducting alkaline earth metal titanate.

4,237,085

METHOD OF PRODUCING A HIGH DENSITY SILICON CARBIDE PRODUCT

Richard H. Smoak, Lewiston, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,403

Int. Cl.[2] C04B *35/56*

U.S. Cl. 264—65 12 Claims

1. A method of sintering under substantially pressureless conditions a mixture consisting of particulate silicon carbide containing less than about 6.0 percent by weight carbon in the form of elemental carbon or a carbon source material comprising the steps of:

a. forming a compact of said mixture, and

b. sintering said compact in an atmosphere containing boron to produce a sintered product having a density greater than about 85 percent of theoretical.

4,237,086

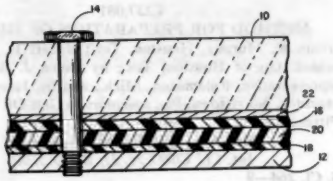
METHOD FOR RELEASABLY MOUNTING A SUBSTRATE ON A BASE PROVIDING HEAT TRANSFER AND ELECTRICAL CONDUCTION

Richard W. Gehle, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 821,034, Aug. 1, 1977, abandoned. This application Feb. 22, 1979, Ser. No. 13,952

Int. Cl.[3] B29H *21/04*

U.S. Cl. 264—130 9 Claims



1. A method of mounting a substrate for microelectronic circuitry on a base wherein a releasable attachment is formed between an attachment surface of said substrate and a related

attachment surface of said base, wherein said attachment surfaces of said substrate and of said base are of electrically conductive material, said method comprising:

treating at least one of said attachment surfaces with a surface modifier to form a film of a fluoropolymer release agent maintained on said at least one of said attachment surfaces wherein said film is thick enough to have anti-sticking properties but no thicker than about 1000 angstroms;

disposing a layer of an adhesive, catalytically polymerizable, and conformable material filled with an electrically conductive material between said substrate and base attachment surfaces; and

applying opposing forces to said substrate and said base in a manner which applies pressure to said conformable material and causes said conformable material to flow into and fill voids and irregularities in said attachment surfaces, thereby mating said attachment surfaces to each other for relatively high thermal conductivity and relatively low electrical resistance between said surfaces.

4,237,087

METHOD OF EMBOSSING WOOD COMPOSITION BOARD

Donald B. Jones, Leola, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Oct. 5, 1979, Ser. No. 82,013
Int. Cl.³ B32B *3/26*
U.S. Cl. 264—134 **3 Claims**

1. A method for embossing filled particle-board or fiberboard comprising:

(a) applying a water-borne basecoat composition comprising an acrylic emulsion resin, a urea resin, and an acid catalyst to the filled surface of said particleboard or fiberboard;

(b) curing the water-borne basecoat composition;

(c) forming a mirror image of a pattern to be embossed on a metal embossing plate; and

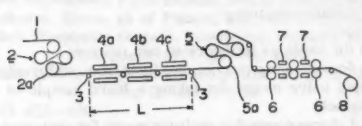
(d) embossing the base-coated particle-board or fiberboard with said metal embossing plate at a press temperature equal to or above 350° F. and a pressure equal to or above 1,500 psi whereby, when the embossing plate is removed, the cured water-borne base-coat does not separate from the particleboard or fiber-board.

4,237,088

STRETCHING OF POLYETHYLENE TEREPHTHALATE FILMS

Shohei Yoshimura, and Tutomu Isaka, both of Inuyama, Japan, assignors to Toyobo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 878,938, Feb. 16, 1978, Pat. No. 4,134,957, which is a continuation of Ser. No. 640,797, Dec. 15, 1975, abandoned, and a continuation-in-part of Ser. No. 420,442, Nov. 30, 1973, abandoned, which is a continuation of Ser. No. 191,856, Oct. 22, 1971, abandoned. This application Oct. 12, 1978, Ser. No. 950,696
Claims priority, application Japan, Oct. 26, 1970, 45/94093
Int. Cl.³ B29C *17/02*
U.S. Cl. 264—235.8 **15 Claims**



9. In a method for further stretching a biaxially oriented polyethylene terephthalate film in one direction, the improvement which comprises conveying said film to a stretching zone, further stretching the film in one direction at a stretching ratio greater than one and not more than three while being maintained at a temperature of 80° to 200° C. in the stretching zone having a length in the direction of stretching which is greater than the breadth of said film, said temperature being maintained in said film throughout the entire extent of said stretching zone, to give a stretched film having a uniform thickness which is substantially the same, or greater than, the thickness of the unstretched film, with all of the material originally present in the unstretched film being present in the stretched film, conveying the stretched film from the stretching zone to a heat-setting zone, and heating the stretched film in said heat-setting zone at a temperature above the second order transition point of the film but below the melting point thereof, the heat-setting step being conducted at a tension no greater than that required to avoid a slackening of the film, the ratio of the length of the stretching zone to the breadth of the film being greater than 1 to 500.

4,237,089

METHOD OF REDUCING INTERNAL STRESSES AND IMPROVING THE MECHANICAL PROPERTIES OF INJECTION MOLDED THERMOPLASTIC RESINS

Josef Kubat, and Jan K. Djurner, both of Gothenburg, Sweden, assignors to Sunds AB, Helsingborg, Sweden

Continuation of Ser. No. 748,916, Dec. 9, 1976, abandoned. This application Jul. 19, 1978, Ser. No. 926,212
Int. Cl.³ B29F *1/00*
U.S. Cl. 264—328.1 **8 Claims**

1. In a method of injection molding a thermoplastic resin under conditions of melt temperature, mold temperature, injection time, holding time, and cooling time appropriate for said thermoplastic resin, the improvement comprising carrying out the injection molding at injection and holding pressures from 250–800 MPa, whereby the molded thermoplastic resin has reduced internal stresses and an essentially reduced tendency to mold shrinkage, warping, crazing and cracking, post-shrinkage and time-dependent deformation.

4,237,090

METHOD FOR INHIBITING CORROSION IN AQUEOUS SYSTEMS

James R. DeMonbrun, Knoxville; Charles R. Schmitt, and James M. Schreyer, both of Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 15, 1978, Ser. No. 960,982
Int. Cl.³ C02F *1/50, 5/12*; C23F *11/06, 11/18*
U.S. Cl. 422—13 **5 Claims**

1. In a system wherein an aqueous liquid is in contact only with a metallic material selected from the group consisting of aluminum and aluminum alloys, the method for retarding corrosion of said metallic material, comprising:

(a) incorporating in said system:

(1) 2–10 ppm by weight of tolytriazole,

(2) an effective amount of a biodegradable organic biocide;

(3) 500–1000 ppm by weight of sodium metasilicate,

(4) 500–2000 ppm by weight of sodium nitrite, and

(5) 500–2000 ppm by weight of sodium tetraborate, all of these concentrations being based on the weight of water in said system, and

(b) maintaining the pH of the resulting solution at a value in the range of 7.5 to 8.0 by the addition of boric acid.

4,237,091

TEMPERATURE PROBE

Donn D. Lobdell, Golden; Stephen J. Herman, Evergreen, and Robert L. Anderson, Boulder, all of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Jun. 21, 1978, Ser. No. 917,469
Int. Cl.³ A61M *1/03*
U.S. Cl. 422—46 **1 Claim**

1. A disposable blood oxygenator, comprising:

a venous blood inlet chamber comprised of a first plastic housing and a venous blood inlet connected thereto,

bubble generating means for forming oxygen bubbles in the blood in said blood inlet chamber,

a gas exchange column means extending upwardly above said blood inlet chamber for transporting said bubbles while gas is exchanged with the blood,

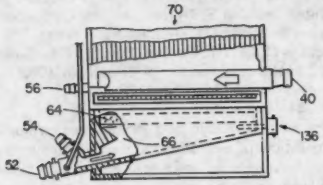
heat exchange means downstream of said inlet chamber for exchanging heat between the blood and another fluid,

defoaming means connected to and communicating with the outlet of said gas exchange means for breaking up bubbles,

a blood reservoir chamber connected to and below said defoaming means for collecting oxygenated and heated blood, said reservoir chamber comprising a plastic housing, and

blood temperature measuring means for monitoring the temperature of the blood in said inlet or reservoir chambers, each said means comprising,

a tubular metallic heat-conductive member with one sealed end and one open end, said sealed end extending



through a wall of said chamber, and the interior of said tubular member being adapted to receive an elongated temperature probe, said probe, being supported by a cylindrical member, and

a molded plastic plug for supporting said tubular metallic member, said plug extending through and sealed to the plastic chamber wall, said tubular metallic member extending through and sealed to said plug, and said plug having means for retaining said probe in said heat-conductive member, said retaining means cooperating with said cylindrical member of said probe such that protuberances extending from said plug or said cylindrical member cooperate with helical slots on the other member,

whereby blood temperature can be measured before or after its passage through said heat and gas exchange means by temperature probes that can be quickly twisted into sterile, secure, heat-sensing communication with the blood and quickly disengaged when the oxygenator has been used and is ready for disposal.

4,237,092

METHOD AND APPARATUS FOR PRODUCING CARBON BLACK

Robert J. Lewis, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 2, 1978, Ser. No. 946,654

Int. Cl.[3] **C09C** *1/48;* **G01N** *31/00*

U.S. Cl. 422—62 **12 Claims**

1. In an apparatus for producing carbon black comprising:

a carbon black reactor having a reaction chamber, a combustion chamber, and a combustion tunnel, said combustion tunnel opening into said combustion chamber for introducing hot combustion gases into said combustion chamber, said combustion chamber opening into the carbon black reaction chamber for introducing hot combustion gases and a carbonaceous feed into said carbon black reaction chamber;

means for supplying a carbonaceous feed to said combustion chamber, the contacting of said carbonaceous feed with said hot combustion gases in said combustion chamber and said carbon black reaction chamber converting said carbonaceous feed to carbon black and gas;

means for separating said carbon black from said gas;

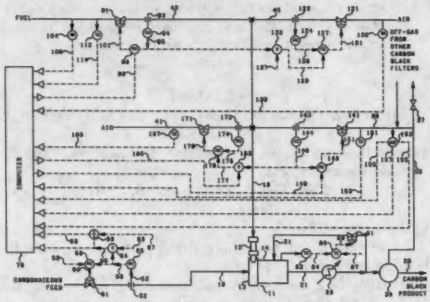
means for supplying said carbon black and said gas from said carbon black reaction chamber to said means for separating said carbon black from said gas;

means for supplying at least a portion of the gas which has been separated from said carbon black from said means for separating said carbon black from said gas to said combustion tunnel as a recycle gas;

means for supplying fuel to said combustion tunnel; and

means for supplying an oxygen containing gas to said combustion tunnel, the combustion of said recycle gas and said fuel with said oxygen containing gas supplying said hot combustion gases;

the improvement comprising:



means for controlling the flow rate of said fuel to said combustion tunnel;

means for controlling the flow rate of said recycle gas to said combustion tunnel; and

means for controlling the flow rate of said oxygen containing gas to said combustion tunnel so as to maintain a desired ratio of said oxygen containing gas to said fuel and a desired ratio of said oxygen containing gas to said recycle gas, the rate of flow of said fuel and the rate of flow of said recycle gas to said combustion tunnel being controlled so as to maintain the ratio of the volume of said hot combustion gases introduced into said combustion chamber to the volume of said carbonaceous feed introduced into said combustion chamber substantially constant at a desired temperature for said hot combustion gases introduced into said combustion chamber.

4,237,093

HYDROCARBON CRACKING

Raymond D. McCoy, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 514,933, Oct. 15, 1974, Pat. No. 4,132,629. This application Dec. 27, 1978, Ser. No. 973,657

Int. Cl.[3] **G01N** *21/00;* **G05D** *7/00*

U.S. Cl. 422—62 **4 Claims**

1. Apparatus comprising:

a reactor;

means for passing a feedstock to said reactor;

means for removing reaction products from said reactor;

a sample valve means for taking a liquid sample of said feedstock;

a liquid chromatographic analyzer means for analyzing said sample and producing an analysis signal representative of the content of said sample, said liquid chromatographic analyzer means having a packed chromatographic column, a chromatographic detector means, and a backflush valve means operably connected to said sample valve means, said column and said detector;

means for accepting said analysis signal and generating

therefrom a first signal representative of the ratio of heavy aromatics to total aromatics within said sample; and

means for controlling at least one reaction condition within said reactor in response to said first signal.

2. Apparatus comprising:

a catalytic reactor;

means for passing a feedstock to said catalytic reactor;

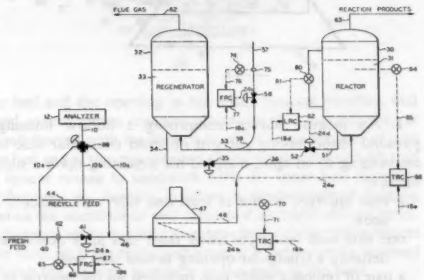
means for removing reaction products from said catalytic reactor;

means for heating said feedstock prior to the introduction of said feedstock into said catalytic reactor;

means for generating a first signal representative of the ratio of heavy aromatics to total aromatics within said feedstock;

means for establishing a second signal representative of the desired flow rate of said feedstock in response to said first signal;

means for establishing a third signal representative of the actual flow rate of said feedstock;



means for comparing said second signal and said third signal and for establishing a fourth signal responsive to the difference between said second signal and said third signal;

means for manipulating the flow rate of said feedstock in response to said fourth signal to thereby manipulate the catalyst to feedstock ratio in said catalytic reactor;

means for establishing a fifth signal representative of the desired temperature of said feedstock in response to said first signal;

means for establishing a sixth signal representative of the actual temperature of said feedstock;

means for comparing said fifth signal and said sixth signal and for establishing a seventh signal responsive to the difference between said fifth signal and said sixth signal; and

means for manipulating the heat supplied from said means for heating said feedstock in response to said seventh signal, to thereby control the extent to which said feedstock is vaporized and also control the amount of heat carried to said catalytic reactor by said feedstock.

4,237,094

APPARATUS FOR PRECISE MUTUAL DILUTION AND DOSAGE OF LIQUIDS

Osmo A. Suovaniemi; Pertti Ekholm, both of Helsinki, and Esko Kaukanen, Espoo, all of Finland, assignors to Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi, Helsinki, Finland

Filed Jan. 5, 1979, Ser. No. 1,396

Claims priority, application Finland, Jan. 10, 1978, 780069

Int. Cl.³ G01N *1/14*

U.S. Cl. 422—100 **5 Claims**

1. Apparatus for the precise dilution of liquid comprising:

a first cylinder;

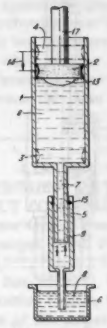
an intake and exhaust tube, coupled for liquid communication to said first cylinder;

piston means coupled to said first cylinder to cause intake and exhaust of liquid into and out of said first cylinder through said intake and exhaust tube;

a second cylinder having a smaller cross-sectional area than said first said cylinder;

at least a portion of said intake and exhaust tube being slidably disposed within said second cylinder, to define a piston within said second cylinder;

liquid intake and exhaust means coupled to said second cylinder to thereby permit the intake and exhaust of said liquid into said first and second cylinders; and



said piston means in said first cylinder and said intake and exhaust tube disposed in said second cylinder being operable independently of each other, said intake and exhaust tube of said first cylinder forming the piston of said second cylinder to intake and exhaust liquid into and out of said second cylinder when said intake and exhaust tube is moved relative to said second cylinder.

4,237,095

TIP VESSEL FOR USE IN CONNECTION WITH A DOSAGE PIPETTE

Osmo A. Suovaniemi; Jukka Tervamäki, and Aarre Kukka, Helsinki, all of Finland, assignors to Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi, Helsinki, Finland

Filed Apr. 20, 1979, Ser. No. 31,940

Claims priority, application Finland, Apr. 25, 1978, 781282; Nov. 7, 1978, 783383

Int. Cl.³ B01L *3/02*; G01N *1/10, 1/14*

U.S. Cl. 422—100 **4 Claims**

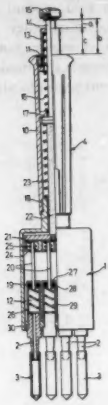
1. A pipette tip vessel adapted for frictional connection to the outer conical surface of the tip cone of a pipette, said tip vessel including

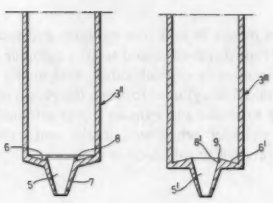
an outer cylindrical wall having first and second ends, said first end forming a first input opening which is adapted to frictionally engage the outer conical surface of said tip cone;

a first annular portion extending substantially inwardly from an area adjacent said second end of said cylindrical wall, said annular portion defining a second input aperture; and

a frustoconical member having its base attached about the periphery of said second input aperture and extending outwardly therefrom with the apex end of said frustoconi-

cal member defining an output aperture, said base including a raised inwardly directed portion disposed about said





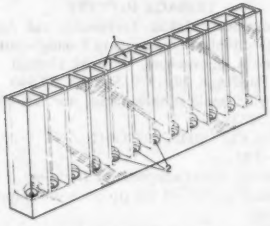
second input aperture and extending into the interior of said tip vessel.

4,237,096

DEVICE FOR MULTIPLE ANALYSES

Michel Popoff, Plaisir; Marie-Jose Brochon, Fontenay sous Bois, and Georges Brault, Savigny sur Orge, all of France, assignors to Institut Pasteur, Paris, France

Filed Jul. 6, 1978, Ser. No. 922,340
Claims priority, application France, Jul. 6, 1977, 77 20846
Int. Cl.[2] G01N *1/00*
U.S. Cl. 422—102 **14 Claims**



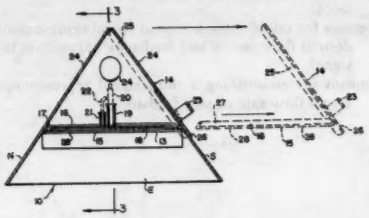
1. Device for use in carrying out simultaneously multiple analysis reactions in a liquid medium, said device comprising a compartment adapted to receive the liquid, separate analysis compartments, a distributing channel communicating said liquid receiving compartment with said analysis compartments, valve-forming means provided in each analysis compartment capable of isolating liquid contained in the analysis compartment from liquid remaining in the distribution channel, each valve-forming means being constituted by a movable solid element positioning itself in resting position so as to close the communication between the analysis compartment and the distribution channel, and opening this same communication under the effect of movement of the liquid on introduction of the liquid into the liquid receiving compartment.

4,237,097

INCENSE BURNER

Raleigh McDuffie, 11240 Kennebec, Detroit, Mich. 48205

Filed May 14, 1979, Ser. No. 39,232
Int. Cl.[3] A62B *7/08;* F23D *3/16*
U.S. Cl. 422—126 **8 Claims**



1. An incense burner comprising a hollow housing of pyramid shape having pairs of opposed triangular side walls converging to an apex, adapted for mounting upon a support surface;

a vent aperture within at least one side wall adjacent said apex;

one side wall being cut away from said apex downwardly defining a triangular opening in said side wall;

a pair of opposed guide rails mounted on the interior of the opposed side walls adjacent said triangular opening;

a triangular door having a handle overlying said one side wall at a corresponding inclination as a continuation thereof and normally overlapping and closing said triangular opening;

a horizontally disposed drawer of rectangular shape along one edge secured to said door at an acute angle thereto and slidably supported upon said rails;

a candle holder mounted upon said drawer adapted to support a candle;

and an incense holder mounted upon said drawer closely adjacent said candle adapted to support a stick of combustible incense closely adjacent said candle; whereby, as the candle gradually burns down, its flame is adapted to ignite said stick of incense, with the products of combustion escaping through said vent aperture.

4,237,098

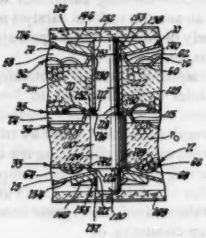
CATALYTIC CONVERTER WITH HOUSING-BED-PLENUM REINFORCING AND SPACING MEANS

David E. Roberts, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 25, 1979, Ser. No. 33,041
Int. Cl.[3] B01J *8/04;* F01N *3/28, 3/34, 7/18*
U.S. Cl. 422—171 **2 Claims**

1. In a catalytic converter for internal combustion engine exhaust gases and of the type having a sheet metal housing enclosing a pair of sheet metal catalyst pellet beds with a stud extending through aligned openings in the members of the housing and both the inner and outer members of each bed to reinforce all these members and also maintain a certain spacing between the members of each bed and wherein the inner bed members also cooperate to form a plenum between the beds: the improvement comprising in combination, a neck integral with one of the inner bed members and extending about its opening and formed over the edge of the opening in the other inner bed member whereby the inner bed members are fixed

together in alignment prior to their assembly in the converter, first spacer means integral with the stud for abutting oppositely facing inner sides of the members of one of the beds to thereby maintain a predetermined spacing therebetween, one end of the stud extending outward through the opening in the outer member of said one bed and also through the opening in one of the housing members, the other end of the stud extending outward through the opening in both of the inner bed members and also through both the opening in the outer member of the



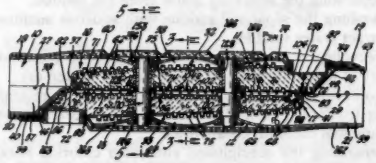
other bed and the opening in the other housing member, and second spacer means received about the stud and abutting at one end thereof with the inner side of the outer member of said other bed and at the opposite end thereof cooperating with said first spacer means to sandwich both the inner bed members therebetween to thereby maintain a predetermined spacing between the members of said other bed and whereby on external clamping of the housing members to the outer bed members at the stud, such clamping and spacing is permanently retained by fixing the housing members to the ends of the stud.

4,237,099

CATALYTIC CONVERTER WITH DUAL CATALYST PELLET BEDS AND PLENUM THEREBETWEEN

William L. Alley, Flushing; David E. Roberts; Charles J. Root, both of Flint, and Michael R. Foster, Columbiaville, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 25, 1979, Ser. No. 33,050
Int. Cl.³ B01J *8/04*; F01N *3/28, 3/34*
U.S. Cl. 422—171 **3 Claims**



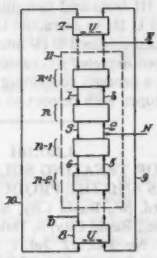
1. In a catalytic converter for internal combustion engine exhaust gases and of the type having a sheet metal housing comprised of a pair of housing shell members cooperatively enclosing and also providing an inlet and an outlet for a pair of sheet metal catalyst pellet beds wherein each of the beds has a perforated outer bed member cooperating with one of the housing shell members so that the inlet and outlet are directly open within the housing to the perforated area of the respective outer bed members and wherein the outer bed members have corresponding flanges extending on opposite sides thereof between the inlet and outlet sandwiched between and welded to corresponding flanges on the housing shell members and wherein each of the beds also has a perforated inner bed member for cooperating with its outer bed member to retain the pellets therebetween while permitting gas flow therethrough and for also cooperating with the inner bed member of the other bed to form a plenum for gas flow between the beds and wherein an air passage extends through the housing to the plenum to deliver air thereto: the improvement comprising in combination, a shoulder integral with and extending across each of the outer bed members outward of its perforated area and between its flanges, mating peripheral flanges on the inner bed members having portions along opposite sides thereof clamped but slidably movable between the welded flanges of the outer bed members while the remaining portions of the mating inner bed member flanges are thereby caused to bear on only their inner bed side against the respective shoulders on the outer bed members whereby the inner bed members cooperate with the respective outer bed members to completely separate the pellets in the beds while relative expansion with heat is permitted between the inner bed members and the outer bed members and also between the inner bed members and the housing shell members.

4,237,100

ISOTOPIC ENRICHMENT OF URANIUM WITH RESPECT TO AN ISOTOPE

Pierre Delvalle, Juvisy sur Orge, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Division of Ser. No. 444,932, Feb. 22, 1974, Pat. No. 4,012,480.
This application Jan. 25, 1977, Ser. No. 762,788
Claims priority, application France, Feb. 27, 1973, 73.06881
The portion of the term of this patent subsequent to Mar. 5, 1994, has been disclaimed.
Int. Cl.² C01G *43/00*; B01D *59/22, 15/04*
U.S. Cl. 423—6 **10 Claims**



1. Apparatus for producing, from a source of uranium containing at least two distinct isotopes, a product containing uranium enriched with respect to said source in one of said isotopes comprising

an exchange cascade for effecting isotope enrichment comprising a plurality of sequentially connected stages for effecting isotope exchange with a U III-rich effluent stage at one end and a U IV-rich effluent stage at another end, said cascade containing a first phase and a second distinct phase, at least one of said phases being liquid, said first phase containing U III and said second phase containing U IV, each of said stages having means for contacting said first and second phases together to enrich the U IV in the lighter of said isotopes while enriching the U III in the heavier of said isotopes, all surfaces of said stages making contact with said first phase being electrically insulating, said cascade including means for producing countercurrent flow of said distinct phases with respect to each other,

an oxidizing reflux connected to said U III-rich effluent stage comprising

means for receiving said first phase flowing out of said U III-rich effluent stage,

means for oxidizing U III derived from said first phase to form U IV and introducing said formed U IV into said second phase, and

means for causing the flow of said second phase with U IV introduced thereinto into said U III-rich effluent stage,

a reducing reflux connected to said U IV-rich effluent stage comprising

means for receiving said second phase flowing out of said U IV-rich effluent stage,

means for reducing U IV derived from said second phase to form U III and introducing said formed U III into said first phase, and

means for causing the flow of said second phase with U III introduced thereinto into said U IV-rich effluent stage,

an inlet connected to said cascade for admitting a source of uranium, and

an outlet connected to said cascade for delivering a product enriched in one of said isotopes with respect to said source.

9. A process for producing, from a source of uranium containing at least two isotopes, a product containing uranium enriched with respect to said source in one of said isotopes, comprising the steps

providing from said source U III in a first phase and U IV in a second phase, one of said phases being liquid and the other being solid,

contacting said first and second phases under conditions such that oxidation of U III does not occur, said contacting effecting exchange of isotopes between U III and U IV to enrich the U IV in the lighter of said isotopes,

extracting U IV from said second phase after said contacting,

reducing said extracted U IV to U III, said reduction being carried out in a liquid phase,

transferring said reduced U III into said first phase which has been first depleted in uranium,

extracting U III from said first phase after said contacting,

oxidizing said U III so extracted to U IV,

transferring said oxidized U IV into said second phase which has first been depleted in uranium, and

withdrawing a product containing uranium enriched in one of said isotopes with respect to said source.

4,237,101

PROCESS FOR TREATING SOLID CARBONACEOUS FOSSIL FUELS AND THE PRODUCTS THUS PREPARED

John W. Willard, Sr., Rapid City, S. Dak., assignor to CAW Industries, Inc., Rapid City, S. Dak.

Division of Ser. No. 593,712, Jul. 7, 1975, Pat. No. 4,084,938, which is a continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, Pat. No. 3,893,943, which is a continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Apr. 14, 1978, Ser. No. 896,241

Int. Cl.[2] C10L 9/10; C10B 57/00

U.S. Cl. 423—20 **30 Claims**

1. A process for treating solid fossil fuels comprising

intimately contacting solid fossil fuel in particulate form selected from the group consisting of coal, lignite, peat and admixtures thereof with a liquid aqueous medium containing a catalytically effective amount of a catalyst,

the solid fossil fuel having active sites therein which react with the liquid aqueous medium in the presence of the said catalyst to produce soluble organic compounds,

the particles of the solid fossil fuel being intimately contacted with the liquid aqueous medium in the presence of the said catalyst until the said active sites thereof react to produce therein organic compounds which are soluble in a (1) liquid organic solvent, (2) aqueous acidic medium, or (3) aqueous basic medium,

the catalyst being prepared by a process comprising

admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0:2.0,

the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,

reacting the alkali metal silicate with said dissolved substances providing calcium ion and magnesium ion to produce an aqueous suspension of finely divided particles of the reaction product,

admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said finely divided particles upon agitating the aqueous medium, and

agitating the aqueous medium containing the finely divided particles and surfactant to form said catalyst micelles,

separating the resultant treated particles of solid fossil fuel from the aqueous medium containing the said catalyst, and

thereafter extracting soluble organic compounds from the treated particles of solid fossil fuel with at least one liquid extractant for the said soluble organic compounds selected from the group consisting of

(a) liquid organic solvent,

(b) an aqueous acidic medium, and

(c) an aqueous basic medium.

4,237,102

PROCESS FOR OBTAINING PURE ALUMINA BY THE HYDROCHLORIC ATTACK OF ALUMINOUS ORES AND EXTRACTION OF THE IMPURITIES BY MEANS OF A SULPHURIC TREATMENT

Joseph Cohen, and Alain Adjemian, both of Aix-en-Provence, France, assignors to Aluminum Pechiney, Lyon, France

Filed May 8, 1979, Ser. No. 35,440

Claims priority, application France, May 18, 1978, 78 15369

Int. Cl.[3] C01F 7/22, 7/26

U.S. Cl. 423—126 **5 Claims**

1. A process for obtaining pure alumina from calcined or uncalcined ore containing impurities of metals selected from the group consisting of iron, titanium, sodium, potassium, magnesium, and calcium comprising:

(a) attacking the ore with hot hydrochloric acid to provide a residue and a liquor containing dissolved aluminum chloride and impurities,

(b) separating the attacking liquor from the residue,

(c) washing the separated residue with aqueous medium to extract water solubles,

(d) recycling the wash liquor from step (c) to constitute a part of the liquor used to attack the ore in step (a),

(e) concentrating the liquor separated from the residue in step (b) until at most 75% of the alumina is precipitated as aluminum chloride hexahydrate,

(f) separating the precipitated aluminum chloride hexahydrate from the remaining liquor containing in solution dissolved aluminum chloride and impurities;

(g) introducing gaseous HCl into the liquor separated from the precipitated aluminum chloride hexahydrate in step (f) to precipitate residual aluminum chloride hexahydrate from the solution,

(h) separating the aluminum chloride hexahydrate precipitate in step (g) from the hydrochloric liquor which still contains dissolved impurities,

(i) recycling the aluminum chloride hexahydrate separated in step (h) to the liquor separated from the residue in step (b),

(j) mixing the hydrochloric acid liquor from step (h) with sulphuric acid liquor and HCl,

(k) heating the mixture of step (j) to concentrate the mixture and release HCl,

(l) absorbing the HCl released from the mixture in step (k)

(m) washing the aluminum chloride hexahydrate separated

from the liquor in step (f) with the HCl liquor from the absorption step (l)

(n) separating the wash liquor from the aluminum chloride hexahydrate washed in step (m),

(o) recycling the wash liquor from step (n) to make up a part of the hydrochloric acid liquor for attacking the ore in step (a) and

(p) thermally decomposing the separated aluminum chloride hexahydrate from step (n) to produce pure alumina.

4,237,103

METHOD FOR DISPOSAL OF SODIUM WASTE MATERIAL

Glen V. Prible, Malvern, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 29, 1978, Ser. No. 920,394
Int. Cl.³ C01B *33/32*
U.S. Cl. 423—207 **15 Claims**

1. A method for disposal of sodium containing waste material comprising:

(a) simultaneously introducing sodium containing waste material and silica bearing material into an incinerator, at least a portion of the incinerator being lined with a refractory material which tends to react with free sodium and deteriorate, the ratio by weight of the sodium and silica in the thus introduced materials being in the range of 0.4 to 0.8;

(b) combusting the sodium containing waste material and silica bearing material to provide a combustion product including a sodium silicate compound whereby deterioration of refractory materials in the incinerator by reaction with free sodium is reduced.

4,237,104

FLUE GAS TREATMENT FOR SULFUR DIOXIDE REMOVAL

Peter Urban, Northbrook, Ill.; John C. Stauter, Edmond, Okla., and William K. Tolley, Arlington Heights, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Apr. 30, 1979, Ser. No. 34,806
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—242 **7 Claims**

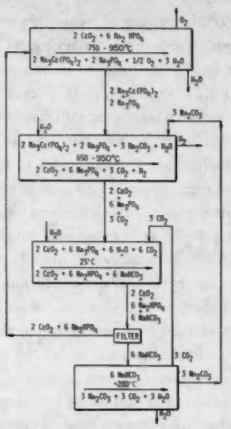
1. In a process for the absorptive removal of sulfur dioxide from a gaseous mixture by contacting said gaseous mixture in a scrubbing zone with a scrubbing liquor comprising a buffered solution of an alkali metal sulfite and bisulfite, the alkalinity of said scrubbing liquor being maintained by the addition thereto of an aqueous alkaline reagent solution comprising sodium carbonate or sodium bicarbonate having a relatively high pH with respect to said scrubbing liquor, said aqueous alkaline reagent solution having dissolved therein an undesirable quantity of silica contaminant which, upon the addition of said aqueous alkaline reagent solution to said scrubbing liquor tends to precipitate from solution and form deleterious deposits which interfere with the functioning of said process, the improvement which comprises the addition of a water soluble acid salt of a metal selected from the group consisting of iron, cobalt, nickel, copper and aluminum to said aqueous alkaline reagent solution prior to the addition of said aqueous alkaline reagent solution to said scrubbing liquor thereby effecting a chemical reaction between said silica and said acid salt to obtain a silicon containing material having a minimum deleterious effect when precipitated and relatively minor interference with the functioning of said process.

4,237,105

THERMOCHEMICAL CYCLIC SYSTEM FOR SPLITTING WATER AND/OR CARBON DIOXIDE BY MEANS OF CERIUM COMPOUNDS AND REACTIONS USEFUL THEREIN

Carlos E. Bamberger, Oak Ridge, and Paul R. Robinson, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 20, 1979, Ser. No. 50,379
Int. Cl.³ C01B *1/02*
U.S. Cl. 423—306 **9 Claims**



1. A method for producing a trialkali metal cerous phosphate comprising reacting ceric oxide with a compound selected from the group consisting of monobasic alkali metal phosphates, dibasic alkali metal phosphates, alkali metal pyrophosphates, and alkali metal metaphosphates at a temperature above about 650° C. to cause the formation of a trialkali metal cerous phosphate.

2. A method for producing hydrogen comprising reacting a trialkali metal cerous phosphate with a first reactant selected from the group consisting of trialkali metal phosphates and cerous phosphates and a second reactant selected from the group consisting of alkali metal carbonates and alkali metal bicarbonates in the presence of water at a temperature above about 650° C. to cause the formation of gaseous hydrogen.

3. A cyclic process for producing hydrogen comprising the steps of

(a) reacting ceric oxide with a compound selected from the group consisting of monobasic alkali metal phosphates, dibasic alkali metal phosphates, alkali metal pyrophosphates, and alkali metal metaphosphates to yield oxygen, water and a solid product,

(b) reacting the thus-produced solid product with a reactant selected from the group consisting of alkali metal carbonates and alkali metal bicarbonates in the presence of water to yield ceric oxide, trialkali metal phosphate, hydrogen and carbon dioxide,

(c) reacting the thus-produced trialkali metal phosphate with water and carbon dioxide to yield alkali metal bicarbonate and monobasic or dibasic alkali metal phosphate,

(d) recycling ceric oxide produced in step (b) to step (a), and

(e) recycling monobasic or dibasic alkali metal phosphate produced in step (c) to step (a).

4,237,106

PRODUCTION OF SOLID AMMONIUM POLYPHOSPHATE BY CONTROLLED COOLING

Gordon C. Hicks, Sheffield, and George H. Megar, Florence, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 629,281, Nov. 6, 1975, now Defensive Publication No. T950,011. This application Apr. 9, 1976, Ser. No. 675,586

Int. Cl.[3] C01B *15/16, 25/26*

U.S. Cl. 423—315 2 Claims

1. An improved process for the solidification of ammonium polyphosphate melts high in nonortho species into strong, nontacky particles of ammonium polyphosphate eminently suitable for fertilizer material, which comprises introducing wet-process phosphoric acid containing 54 to 72 percent by weight P_2O_5 into inline reactor means, said inline reactor means comprising a common pipe-type reactor; simultaneously introducing a stream of ammonia into said inline reactor means in quantities sufficient to maintain therein a mole ratio of NH_3:H_3PO_4 in the range from about 0.8 to 1.0; simultaneously introducing a stream of water into said inline reactor means in quantities sufficient to maintain a reaction temperature of about 500° to about 600° F.; contacting said wet-process acid with said streams of ammonia and water in said common pipe reactor at about atmospheric pressure and forming at temperatures in the range of about 500° to about 600° F. in said inline reactor means a resulting melt of ammonium polyphosphate containing upwards to about 60 percent of the P_2O_5 values therein as polyphosphate; exhausting water vapor formed by heat of said ammoniation reaction in said inline reactor means and excess ammonia vapor into means for recovery of said ammonia vapor; introducing said melt into a first-stage pugmill cooler open to ambient atmospheric pressure, in which the melt is worked mechanically and the temperature of said melt is decreased to a range of about 300° to about 350° F. by simultaneously introducing either a stream of air or a stream of particles of recycled fines from a later-mentioned crushing step, or both; simultaneously introducing a second stream of ammonia into said cooler to increase the NH_3:H_3PO_4 mole ratio of said ammonium polyphosphate melt to about 1.0 to 1.2; withdrawing the resulting cooled melt from the end of said cooler; introducing said withdrawn melt onto second-stage cooler means, said second-stage cooler means open to ambient atmospheric pressure and comprising an endless metal belt, the surface of which is cooled with streams of water maintained at various temperatures from about 50° to about 180° F.; withdrawing solidified ammonium polyphosphate material from the end of said second-stage cooler means; introducing said withdrawn material into a common crusher; withdrawing crushed material from said crusher; introducing said crushed material into sizing means; returning particles of predetermined size from said sizing means into said first-stage cooler means and withdrawing from said sizing means particles of ammonium polyphosphate as product, said process characterized by the fact that the crystalline material is formed in sufficiently large crystal size and quantity to solidify any amorphous matter in the product withdrawn from said second-stage cooler, and said product withdrawn from said second-stage cooler containing in the range from about 30 to about 55 percent of its total P_2O_5 content as polyphosphate.

4,237,107

CELLULAR CARBON BEADS AND PROCESS FOR FABRICATION

Jacques Gillot, Grand-Lancy; Stuart F. Exell, Geneva, and Benno Lux, Veyrier, all of Switzerland, assignors to Battelle Memorial Institute, Switzerland

Continuation of Ser. No. 728,406, Sep. 30, 1976, abandoned, which is a division of Ser. No. 453,083, Mar. 20, 1974, abandoned. This application Jun. 21, 1978, Ser. No. 917,582

Claims priority, application Switzerland, Mar. 20, 1973, 4071/73; Mar. 20, 1973, 4072/73

Int. Cl.[3] C01B *31/00, 31/02*

U.S. Cl. 423—445 10 Claims

1. A process for the manufacture of spherical cellular beads of carbon consisting of a plurality of interior and peripheral cells wherein peripheral walls of said peripheral cells form the spherical external surface, said peripheral walls having a thickness of between 50–500 microns, said bead having an internal central part confined within said peripheral walls comprising cells with approximately uniform dimensions and surrounded by the peripheral walls in which the dimensions of the cells, as well as the volume fraction they occupy progressively decreases from the inside to the peripheral cells comprising the steps of:

(a) preparing a mixture which comprises:

(1) at lease one organic polymer precursor material, which is capable of being transformed into a rigid thermoset polymer which is selected from the group consisting of phenoplast resins, thermoset polyurethane resins, and mixtures of polymers of furfuryl alcohol and polyurethane resins; and

(2) dividing this mixture into particles;

(c) introducing and suspending the particles in a fluidized bed comprising at least one pulverulent inert solid material, the bed being subjected to an agitating motion, while the suspended particles are prevented from touching one another by said pulverulent material;

(d) heating the separated particles in the bed for a period of time in the order of 30 minutes so as to cause liberation of expansion gases to effect their expansion at a rate to form individual spherical cellular beads with non-coalesced cells internal of the beads in which the volume fraction the internal cells occupy progressively decreases from the inside to the peripheral cells with peripheral walls of a thickness between 50–500 microns and through which the expansion gases are vented and said heating effecting hardening of the beads while still separated one from another; and then

(e) carbonizing said hardened beads by progressively heating to a temperature lying between 1000° C. and 1200° C., for a time comprising between 1 and 24 hours, under a nonoxidizing atmosphere to form said spherical cellular beads of carbon and while carbonizing venting gaseous materials therein through said peripheral walls and the beads remain intact.

4,237,108

PROCESS FOR PRODUCING CARBON FABRIC

Mototada Fukuhara, and Ken-ichi Morita, both of Ehime, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 834,308, Sep. 19, 1977, abandoned. This application Oct. 9, 1979, Ser. No. 82,527

Claims priority, application United Kingdom, Dec. 9, 1976, 51434/76

Int. Cl.[3] D01F *9/12*

U.S. Cl. 423—447.4 10 Claims

1. A process for producing a carbon fabric comprising the steps of:

subjecting an acrylonitrile polymer fiber to thermal setting treatment at a temperature of from 100° to 350° C. under a tension of at least 0.01 gram/denier in hot air or steam to obtain a fiber having a fusing temperature of at least 310°

C., a shrinkage of not larger than 5 percent and a tensile strength of at least 3.5 grams/denier,

weaving or knitting the thermally set fiber into a woven or knitted fabric exhibiting a free areal shrinkage of not more than 50 percent, and then,

heating for stabilization of the fabric in an active gas atmosphere maintained at a temperature of from 200° to 350° C. under conditions such that the fabric is permitted to shrink by at least 80 percent of the free areal shrinkage, said active gas being selected from the group consisting of air and other oxygen-containing gases, nitric oxide, ozone and sulphur dioxide, and

carbonizing the heat-stabilized fabric in an inactive gas atmosphere.

4,237,109
PROCESS FOR PRODUCING CARBON FABRIC

Toru Hiramatsu, and Ken-ichi Morita, both of Ehime, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 040,398, May 18, 1978, abandoned, which is a continuation of Ser. No. 834,307, Sep. 9, 1977, abandoned. This application Dec. 11, 1979, Ser. No. 102,577

Claims priority, application United Kingdom, Dec. 17, 1976, 52915/76

Int. Cl.[3] **D01F** *9/22*

U.S. Cl. 423—447.5 **11 Claims**

1. An improvement in a process for producing a carbon fiber wherein a precursor fabric of an acrylonitrile polymer fiber is heated in an oxidizing gas atmosphere maintained at a temperature of from 200° to 400° C., said gas being selected from the group consisting of air, nitric oxide, ozone and sulfur dioxide; and then, the fabric is carbonized in a non-oxidizing gas atmosphere maintained at a temperature of at least 700° C.; said acrylonitrile polymer being polyacrylonitrile or a copolymer comprised of, based on the weight of the copolymer, at least 94% by weight of acrylonitrile and not more than 6% by weight of at least one other copolymerizable monoethylenically unsaturated monomer; the improvement comprising:

using, as the precursor fabric, a fabric (i) exhibiting a free areal shrinkage of no more than 50%, (ii) containing at least one transition metal or transition metal-containing compound selected from the group consisting of manganese, chromium, a manganese-containing compound and a chromium-containing compound, and (iii) being comprised of an acrylonitrile polymer fiber, which (a) has an intrinsic viscosity of from 1.4 to 2.3, (b) contains not more than 0.1%, based on the weight of the dry fiber, of a residual solvent, (c) has been drawn at a total drawing ratio of at least 6 based on its original length and (d) has a fusing temperature of at least 310° C.; and said fabric (iv) having a weight per unit area, satisfying the formula:

$$50 \times \frac{C^1 \cdot D^{1/1.6}(1-S)}{Y} \leqq E \leqq 300 \times \frac{C^{1/1.6}(1-S)}{Y}$$

wherein E is weight per unit area (g/m^2) of the fabric, C is weave factor, D is average fineness in deniers, divided by 1000, of the bundle of fibers, used as the weft and warp for the formation of the fabric, S is areal shrinkage of the fabric represented by the equation:

$$S=(S_1-S_2)/S_1$$

where S_1 and S_2 are areas of the fabric as determined before and after the oxidation and carbonization, respectively, and Y is carbonization yield;

said improvement further comprising carrying out said heating of the precursor fabric under conditions such that the fabric is permitted to shrink by at least 80% of the free areal shrinkage.

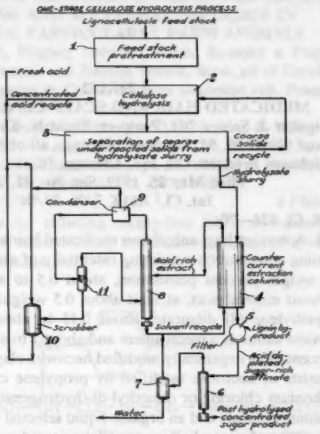
4,237,110
PROCESS FOR SEPARATING AND RECOVERING CONCENTRATED HYDROCHLORIC ACID FROM THE CRUDE PRODUCT OBTAINED FROM THE ACID HYDROLYSIS OF CELLULOSE

Allen V. Forster; Lyle E. Martz, and Douglas E. Leng, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 30, 1979, Ser. No. 34,784

Int. Cl.[2] **C01B** *7/08;* **C13K** *1/04*

U.S. Cl. 423—488 **9 Claims**



1. A process for separating and recovering concentrated hydrochloric acid from the crude product produced from the acid hydrolysis of a cellulose-containing material, the crude product comprising concentrated hydrochloric acid and the sugars produced from the acid hydrolysis of the cellulose-containing material, into a first fraction comprising the concentrated hydrochloric acid and a second fraction comprising the sugars, the process comprising:

(1) contacting the crude product with an organic solvent consisting essentially of at least one C_5–C_9 alcohol such that the organic solvent is enriched with the concentrated hydrochloric acid,

(2) separating the enriched organic solvent from the concentrated hydrochloric acid depleted crude product, and

(3) recovering the concentrated hydrochloric acid from the enriched organic solvent.

4,237,111
METHOD OF MANUFACTURING MELTED IRON OXIDE

Oddmund Wallevik, Porsgrunn, and Erik Dessen, Skien, both of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Oct. 17, 1978, Ser. No. 952,136

Claims priority, application Norway, Nov. 15, 1977, 773905

Int. Cl.[3] **C01G** *49/02*

U.S. Cl. 423—632 **4 Claims**

1. A method of manufacturing molten iron oxide which may contain minor amounts of other oxides which comprises inserting a mold of sheet iron in a crucible induction furnace, ramming magnetite between the mold and furnace wall, sintering the magnetite at a temperature of 1600°–1900° C. to form a furnace lining by inserting iron or steel material into the mold within the furnace and heating within said temperature range to melt the iron or steel material, pouring out the major amount of the thus-melted iron or steel material, converting the remaining melt within the furnace to iron oxide by adding a charge of iron oxide to the furnace, adjusting the temperature of the mixture such that a mixture of solid and melted material

is formed within the furnace by regulating the electrical power supply, stirring said mixture sufficiently to render the temperature of the mixture uniform throughout and then pouring a major amount of the iron oxide melt thus-formed and thereafter charging the furnace with more iron oxide material and repeating the above procedure of producing the molten iron oxide until the lining has to be changed.

4,237,112

MEDICATED HAIR AND SCALP CONDITIONER

Zbigniew J. Selega, Mt. Prospect; Ezzat N. Khalil, Oak Park, and Gloria M. McKavanagh, Chicago, all of Ill., assignors to Johnson Products Co., Inc., Chicago, Ill.

Filed May 25, 1979, Ser. No. 42,720
Int. Cl.[3] A61K *7/06, 33/04*
U.S. Cl. 424—70 4 Claims

1. A non-settling, anhydrous medicated hair and scalp conditioning composition consisting essentially of about 50 to about 94 weight percent petrolatum, about 0.5 to about 5 weight percent mineral wax, at least about 0.5 weight percent polyoxyethylene (8) dilaurate, about 0.15 to about 2.25 weight percent sulfur as a medicament and about 1 to about 30 weight percent of an organically modified hectorite clay gellant which consists of hectorite modified by propylene carbonate, stearalkonium chloride or dimethyl-di-(hydrogenated tallow) ammonium chloride and an organic liquid selected from the group consisting of mineral oil, castor oil, isopropyl myristate, isopropyl palmitate, a mixture of lanolin oil and isopropyl palmitate, and a mixture of propylene glycol dicaprylate and propylene glycol dicaprate, said composition having one apparent phase.

4,237,113

BIOLOGICALLY ACTIVE INSECTICIDE CONTAINING POLYMERIC FORMULATION

Nathan F. Cardarelli, 3261 Brenner Rd., Barberton, Ohio 44203

Continuation-in-part of Ser. No. 916,570, Jun. 19, 1978, Pat. No. 4,166,111. This application Jan. 22, 1979, Ser. No. 5,173
Int. Cl.[3] A01N *57/00, 57/26, 47/10*
U.S. Cl. 424—78 23 Claims

1. A slow release insecticide-containing polymer composition for distribution upon a non-water surface, comprising:

100 parts by weight of a polymer selected from the group consisting of an ethylene-propylene copolymer, an ethylene-vinyl acetate copolymer, and combinations thereof, said ethylene-vinyl acetate copolymer having a weight average molecular weight of from about 40,000 to about 400,000 and the amount of said ethylene in said copolymer ranging from about 60 to about 95 percent by weight, said ethylene-propylene copolymer having a weight average molecular weight of from about 50,000 to about 250,000, and the amount of said ethylene in said copolymer ranging from about 30 to about 80 percent by weight; and

a non-volatile insecticide, said insecticide selected from the group consisting of O,O-diethyl-O-(2-isopropyl-6-methyl-5-pyrimidinyl)phosphorathioate and 2-(1-methylethoxy)-phenol methylcarbamate, the amount of said insecticide ranging from about 0.2 to about 40 parts by weight.

4,237,114

METHOD AND COMPOSITION FOR THE LONG TERM CONTROLLED RELEASE OF A NON-PERSISTENT ORGANOTIN PESTICIDE FROM AN INERT MONOLITHIC THERMOPLASTIC DISPENSER

Nathan F. Cardarelli, Barberton, Ohio, assignor to Environmental Chemicals, Inc., Wauconda, Ill.

Continuation-in-part of Ser. No. 916,570, Jun. 19, 1978, Pat. No. 4,166,111. This application Jan. 22, 1979, Ser. No. 5,174
The portion of the term of this patent subsequent to Aug. 28, 1996, has been disclaimed.
Int. Cl.[3] A01N *55/04*
U.S. Cl. 424—78 70 Claims

1. A composition for destroying aquatic pests over a period of time, comprising:

100 parts by weight of a polymer matrix selected from the group consisting of an ethylene-vinyl acetate copolymer, and ethylene-propylene copolymer, and combinations thereof, the amount by weight of said ethylene constituent in said ethylene-vinyl acetate copolymer ranging from about 60 percent to about 95 percent, said ethylene-vinyl acetate copolymer having a molecular weight of from about 40,000 to about 400,000, the amount by weight of said ethylene constituent and said ethylene-propylene copolymer ranging from about 30 percent to about 80 percent, the weight average molecular weight of said ethylene-propylene copolymer ranging from about 50,000 to about 250,000;

from about 25 to about 75 parts by weight per 100 parts of said copolymer matrix of a toxicant, said toxicant having the formula R_3S_nX, where R is selected from the group consisting of an alkyl group having from 1 to 8 carbon atoms, or an aryl group, and a substituted aryl group wherein said substituted group is an alkyl or an ester containing from 1 to 6 carbon atoms; X is selected from the group consisting of a halogen, an oxide, an alkoxy OR^1 where R^1 is an alkyl having from 1 to 12 carbon atoms, or an

group where R" is an alkyl having from 1 to 12 carbon atoms; and

from about 15 to about 70 parts by weight per 100 parts of said polymer matrix of a moderate to low solubility porosity inducing agent, said porosity inducing agent selected from the group consisting of a non-alkaline earth salt, and a non-alkaline earth oxide, said porosity inducing agent having a solubility in water of 0.1 grams or less per 100 grams of water.

4,237,115

METHOD OF IMMUNIZATION AGAINST ENTEROTOXOGENIC INFECTION BY *ESCHERICHIA COLI*

Charles C. Brinton, Jr., Pittsburgh, Pa., assignor to Bactex, Inc., Pittsburgh, Pa.

Filed Nov. 23, 1977, Ser. No. 854,343
Int. Cl.[3] A61K *39/02*
U.S. Cl. 424—92 12 Claims

6. A method of protecting newborn piglets against neonatal porcine colibacillosis caused by a member of a predetermined first group of strains of piliated *E. coli* which comprises

(a) administering pre-partum to pregnant sows a composition comprising pili derived from at least one member of a second group of strains of piliated *E. coli* organisms wherein cells of organisms of said first group are agglutinable by serum containing antibodies against pili from said strains which may be the same as or different from strains of said second group; said first group consisting of strains

which may be the same as or different from the strains of said second group;

(b) administering colostrum or milk derived postpartum from the aforesaid sows to newborn piglets.

4,237,116

COMBINATION OF THIOPEPTIN AND RUMENSIN TO IMPROVE RUMINANT FEED EFFICIENCY

James Gillin, Westfield, and David P. Jacobus, Princeton, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 19, 1979, Ser. No. 31,660

Int. Cl.³ A61K *35/00, 37/00*

U.S. Cl. 424—117 **2 Claims**

1. A method for increasing the feed efficiency of ruminant animals which comprises orally administering to said ruminant as a part of said ruminant's feed a combination of 8.25 parts per million of thiopeptin, and 16.5 parts per million of rumensin.

4,237,117

METHOD FOR THE TREATMENT OF BENIGN PROSTATIC HYPERTROPHY

Tiberio Bruzzese, and Lorenzo Ferrari, both of Milan, Italy, assignors to Spa-Societa Prodotti Antibiotici S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 957,870, Nov. 6, 1978, abandoned. This application Oct. 5, 1979, Ser. No. 82,403

Int. Cl.³ A61K *35/00*

U.S. Cl. 424—122 **5 Claims**

1. A method for the treatment of benign prostatic hypertrophy in human males, comprising administering an active compound selected from the group consisting of partricin, C_1–C_6 alkyl ester of partricin and C_1–C_6 alkyl ester of N-mono- and N,N-disubstituted ρartricin, the N-substituents being C_1–C_6 alkyl or carboxylic acyl, to a human male in need of said treatment in an amount sufficient to alleviate benign prostatic hypertrophy.

4,237,118

DIETARY SUPPLEMENT AND DIETARY METHODS EMPLOYING SAID SUPPLEMENT FOR THE TREATMENT OF OBESITY

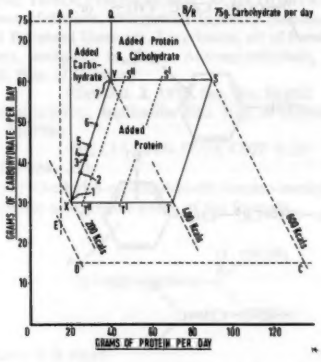
Alan N. Howard, 10 Topcliffe Way, Cambridge, England

Continuation-in-part of Ser. No. 338,257, Mar. 5, 1973, Pat. No. 4,009,265. This application May 14, 1976, Ser. No. 686,594

Claims priority, application United Kingdom, Mar. 6, 1972, 10439/72; May 16, 1975, 21029/75

Int. Cl.³ A0N *59/20;* **A01N** *59/16;* **A61K** *33/18*

U.S. Cl. 424—140 **30 Claims**



1. A dietary supplement, containing minerals and vitamins, for use in a conjunction with skimmed milk to provide a complete low-calorie diet for the treatment of obesity in man, in which the amount of said supplement which contains a datum level of 18 mg ±9 mg iron also contains at least 182 mg sodium, at least 308 mg potassium and at least 64 mg magnesium, as well as vitamin A in an amount of at least 750 μg retinol equivalents, at least 100 i.u. Vitamin D, at least 0.76 mg thiamine, at least 14 mg nicotinic acid and at least 18 mg ascorbic acid, and in which the total calorie content (if any) of that amount of supplement is not greater than 200 Kcals.

4,237,119

LONG-ACTING OXYTOCIN ANALOGS FOR USE IN INDUCING AND ACCELERATING LABOR IN MAMMALS, PARTICULARLY FARM ANIMALS

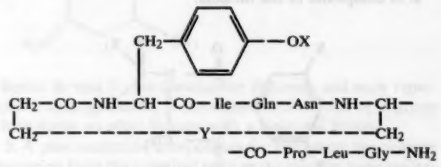
Joseph H. Cort, Prague; Tomislav Barth, Roztoky u Praha; Karel Jost, Prague, and Zdenek Veznik, Brno, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 931,134, Aug. 4, 1978, abandoned, which is a continuation of Ser. No. 813,665, Jul. 7, 1977, abandoned. This application Apr. 18, 1979, Ser. No. 31,062

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **4 Claims**

1. A method for inducing tetany-free labor in mammals which comprises administering an effective amount of a compound of the formula



where X is H or CH_3 and Y is CH_2S or SCH_2.

4,237,120

ANTIBACTERIAL AGENT BM123-GAMMA, PHARMACEUTICALLY ACCEPTABLE SALTS, COMPLEXES AND ALKYLATED DERIVATIVES AS ANIMAL FOOD ADDITIVES

Donald L. Ingle, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 874,432, Feb. 2, 1978, abandoned. This application Aug. 28, 1979, Ser. No. 70,458

Int. Cl.³ A61K *31/71*

U.S. Cl. 424—181 **29 Claims**

1. A method for improving feed efficiency and enhancing the growth rate of meat animals comprising administering orally to the animals an effective amount of an antibacterial ingredient of antibiotic trans-BM123γ, an antibiotic trans-BM123γ salt, an antibiotic trans-BM123γ alkyl sulfate complex, an antibiotic trans-BM123γ dioctyl sulfosuccinate complex, an antibiotic trans-BM123γ syntan complex, an antibiotic trans-BM123γ pamoate complex, an antibiotic trans-BM123γ alkylated derivative, and mixtures thereof in any proportion.

4,237,121

SUBSTITUTED OXADIAZOLES AND THEIR USE AS CORN ROOT WORM INSECTICIDES

William F. King, Novato, and Ronald E. Wheeler, Martinez, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

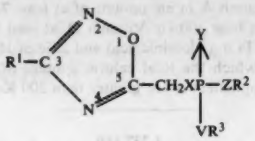
Continuation of Ser. No. 943,078, Sep. 18, 1978, abandoned. This application Jun. 14, 1979, Ser. No. 48,560

Int. Cl.³ A01N *57/00, 57/26*

U.S. Cl. 424—200 **4 Claims**

1. A method for killing corn root worms which comprises

applying to the soil habitat of the corn root worms an insecticidally effective amount of a compound of the formula



wherein R^1, R^2 and R^3 are alkyl of 1 to 4 carbon atoms; and X, Y, Z and V are sulfur or oxygen.

4,237,122

IMIDAZOLIDINEDIONE COMPOUNDS, AND THEIR PRODUCTION AND USE

Shuichiro Asao, Ashiya; Shigeo Yamamoto, Ikeda; Yoshio Hisada, Kawanishi; Yoshinori Nakayama, Takarazuka, and Chiyozo Takayama, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

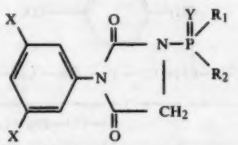
Filed Jun. 15, 1979, Ser. No. 48,745

Claims priority, application Japan, Jun. 22, 1978, 53-76109; Dec. 28, 1978, 53-163012

Int. Cl.[3] **A01N** *57/16;* **C07D** *233/40*

U.S. Cl. 424—200 **13 Claims**

1. A compound of the formula:



PS wherein X is a chlorine atom or a bromine atom, Y is an oxygen atom or a sulfur atom, and R_1 and R_2 are each a C_1–C_4 alkyl group, a C_1–C_4 alkoxy group, a C_1–C_4 alkylthio group, an ar(C_1–C_4)alkylthio group, a C_1–C_4 alkoxy(C_2–C_4)alkoxy group, a phenyl group, a phenoxy group, a C_1–C_4 alkylthiophenoxy group, a C_1–C_8 alkylamino group, a C_2–C_8 alkenylamino group or a cyano(C_1–C_4)alkylamino group.

10. A method for controlling insects, acarids, nematodes or fungi which comprises applying an effective amount of the compound according to claim 1 to the insects, acarids, nematodes or fungi.

4,237,123

OXYIMINO-SUBSTITUTED CYCLOPROPANECARBOXYLATE PESTICIDES

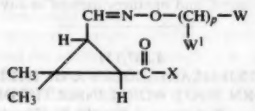
Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 25, 1979, Ser. No. 51,668

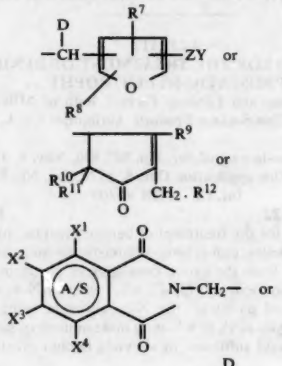
Int. Cl.[3] **A01N** *53/00, 57/20;* **C07C** *131/02;* **C07D** *307/54*

U.S. Cl. 424—200 **16 Claims**

1. A cyclopropane compound having the formula

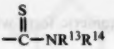


wherein W is thienyl, furfuryl, $-CO_2R^1$, $-CONR^1R^2$, $-SO_3R^1$, $-SO_2NR^1R^2$, $-PO(OR^1)_2$, $-NO_2$, $-CN$, $-OR^1$, $-SR^1$, $-S(O)R^1$, $-S(O)_2R^1$, $-NR^1R^2$, $-N(O)R^1R^2$ or $-(OCH_2CH_2)_q-OR^1$ in which q is an integer of 1 to 4, R^1 and R^2 each independently is a hydrogen atom, an alkyl group containing from 1 to 8 carbon atoms optionally substituted by one or more halogen atoms, a (cycloalkyl)alkyl group containing from 3 to 7 ring carbon atoms, a total of from 4 to 9 carbon atoms and optionally ring-substituted by one or more halogen atoms, a cycloalkyl group containing from 3 to 7 ring carbon atoms, an alkenyl group containing from 3 to 4 carbon atoms optionally substituted by one or more halogen atoms or an alkynyl group containing from 3 to 4 carbon atoms or an aryl group containing from 6 to 12 carbon atoms or an aralkyl group containing from 7 to 10 carbon atoms, each optionally ring-substituted by one or more halogen atoms or R^1 and R^2 taken together is an alkylene or oxalkylene group containing from 4 to 6 carbon atoms, or when one of R^1 and R^2 is furfuryl or thienyl then the other is a hydrogen atom; p is an integer of 1 or 2; when p is 1 then W^1 is an alkyl group containing from 1 to 4 carbon atoms or when p is 2 then W^1 is a hydrogen atom; X is a group of the formula

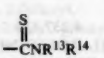


wherein Y represents hydrogen or an alkyl, alkenyl or alkynyl group or an aryl or furyl group which is unsubstituted or substituted in the ring by one or more alkyl, alkenyl, alkoxy or

halogeno groups, R^7 and R^8, which may be the same or different, each represent hydrogen or an alkyl or alkenyl group, R^9 represents hydrogen or a methyl group, R^{10} and R^{11} represent hydrogen or an alkyl group, R^{12} represents an organic radical having carbon-carbon unsaturation in a position α to the CH_2 group to which R^{12} is attached, A/S indicates an aromatic ring or a dihydro or tetrahydro analogue thereof, X^1, X^2, X^3 and X^4, which may be the same or different, each represents hydrogen, halogen or a methyl group, D represents H, —CH, —C≡CH or



in which R^{13} and R^{14} may be the same or different, each represent a hydrogen atom or an alkyl group containing from 1 to 10 carbon atoms, Z represents $—CH_2$, —,—O—, —CO— or —S—, Z^1 and Z^2, which may be the same or different, each represents halogen or an alkyl group containing 1 to 4 carbon atoms and n is 0, 1 or 2, R^3 and R^4 each independently is a hydrogen atom, a halogen atom having an atomic number of from 9 to 35, inclusive, an alkyl group containing from 1 to 4 carbon atoms or a nitro group, R^5 is a hydrogen atom or a halogen atom having an atomic number of from 9 to 35, inclusive, each R^6 is independently a halogen atom having an atomic number of from 9 to 35, inclusive; and m is an integer of from 1 to 5 with the proviso that when D is —CN, —C≡CH or



then the alcohol moiety is in the R,S-racemic or in the S-optical configuration.

13. A method of controlling pests at a locus which comprises applying to the pests or to the locus a pesticidally effective amount of an oxyimino-substituted cyclopropane carboxylate according to claim 1.

4,237,124

COMBATING PESTS WITH O-ETHYL-S-N-PROPYL-N-ALKYLAMINO-METHYLIDENE THIOLPHOSPHORIC ACID DIESTER-IMIDES

Hellmut Hoffmann, Wuppertal; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

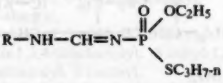
Filed Jul. 2, 1979, Ser. No. 54,062

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831934

Int. Cl.³ A01N *57/28*; C07F *9/24*

U.S. Cl. 424—211 **8 Claims**

1. An O-ethyl-S-n-propyl-N-alkylamino-methylidene-thiolphosphoric acid diester-imide of the formula



in which R is alkyl.

6. A method of combating arthropods or nematodes which comprises applying to the arthropods or nematodes, or to a habitat thereof, an arthropodicidally or nematicidally effective amount of a compound according to claim 1.

4,237,125

1α-HYDROXY-24-DEHYDROVITAMIN D_3 PHARMACEUTICAL COMPOSITIONS AND USES THEREOF

Kiyoshi Bannai; Norio Ohnuma; Seiichi Ishizuka, all of Hino; Junji Kubo, Hachioji, and Tatuyuki Naruchi, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 17, 1978, Ser. No. 906,785

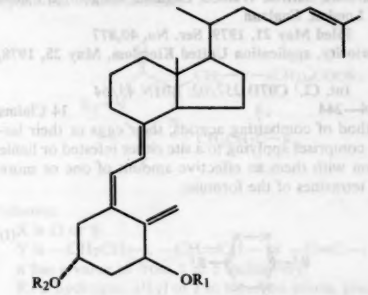
Claims priority, application Japan, May 24, 1977, 52-59454

Int. Cl.³ A61K *51/39*; C07J *9/00*

U.S. Cl. 424—236 **7 Claims**

1. 1α-Hydroxy-24-dehydrovitamin D_3 or its derivatives having a protected hydroxyl group of the formula

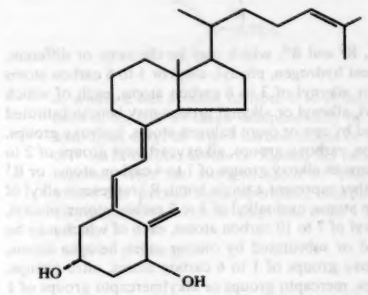
(1a)



wherein R_1 and R_2 are identical or different, and each represents a hydrogen atom, a carboxylic acid residue or a group which forms an ether linkage with a hydroxyl group.

3. A pharmaceutical composition for enhancing the calcium absorption from the intestinal tract or the calcium bone resorption of warm-blooded animals comprising a therapeutically effective amount of 1α-hydroxy-24-dehydrovitamin D_3 of the formula

(1a)



4,237,126

2β, 16β-BIS-PIPERIDINO-ANDROSTANES

Ian C. Carlyle, Hamilton; Thomas Sleigh, Wishaw, and David S. Savage, Glasgow, all of Scotland, assignors to Akzona Incorporated, Asheville, N.C.

Filed Aug. 20, 1979, Ser. No. 67,878

Claims priority, application United Kingdom, Sep. 5, 1978, 35667/78

Int. Cl.³ A61K *31/58*

U.S. Cl. 424—241 **30 Claims**

1. A pharmaceutically acceptable acid addition salt of the 16β-mono-quaternary ammonium derivative of either a 3α,17β-di-lower aliphatic ester of 2β,16β-dipiperidino-3α,17β-

dihydroxy-5α-androstane or a 3α-lower aliphatic ester of 2β,16β-dipiperidino-3α-hydroxy-5α-androstane.

27. A pharmaceutical composition useful as a neuromuscular blocking agent comprising

(a) a neuromuscular blocking effective amount of a pharmaceutically acceptable acid addition salt of the 16β-monoquaternary ammonium derivative of either a 3α,17β-di-lower aliphatic ester or a 3α-lower aliphatic ester of 2β,16β-dipiperidino-3α-hydroxy-5α-androstane, and

(b) water.

4,237,127

1,2,4,5-TETRAZINES

John H. Parsons, Saffron Walden, England, assignor to Fisons Limited, London, England

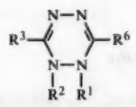
Filed May 21, 1979, Ser. No. 40,877

Claims priority, application United Kingdom, May 25, 1978, 22306/78

Int. Cl.³ C07D *257/02;* A01N *43/64*

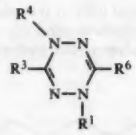
U.S. Cl. 424—244 **14 Claims**

1. A method of combatting acarids, their eggs or their larvae, which comprises applying to a site either infested or liable to infestation with them an effective amount of one or more substituted tetrazines of the formula:



(I)

or of the formula:



(II)

wherein R^1, R^2 and R^4, which may be the same or different, each represent hydrogen, phenyl, alkyl or 1 to 6 carbon atoms or alkenyl or alkynyl of 3 to 6 carbon atoms, each of which phenyl, alkyl, alkenyl or alkynyl groups may be unsubstituted or substituted by one or more halogen atoms, hydroxy groups, cyano groups, carboxy groups, alkoxycarbonyl groups of 2 to 5 carbon atoms or alkoxy groups of 1 to 4 carbon atoms; or R^1 and R^2 together represent a single bond; R^3 represents alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, phenyl, or phenylalkyl of 7 to 10 carbon atoms, each of which may be unsubstituted or substituted by one or more halogen atoms, alkyl or alkoxy groups of 1 to 6 carbon atoms, nitro groups, cyano groups, mercapto groups or alkylmercapto groups of 1 to 4 carbon atoms; and R^6 represents a phenyl group substituted in at least the 2-position by fluorine, chlorine, bromine or iodine.

4,237,128

7-[2-(2-AMINO-4-THIAZOLYL)-2-[(1-CARBOXY-1,1-DIALKYL)ALKOXYIMINO]ACETAMIDO]CEPHEM SULFOXIDES

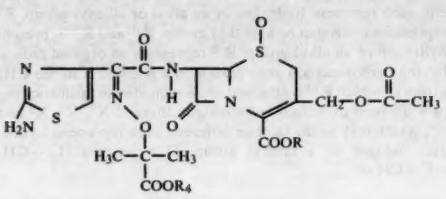
Christopher M. Cimarusti, Hamilton; William H. Koster, East Amwell Township, Hunterdon County, and Richard B. Sykes, Rocky Hill, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 12, 1979, Ser. No. 29,417

Int. Cl.³ A61K *31/545;* C07D *501/34*

U.S. Cl. 424—246 **5 Claims**

1. A compound of the formula:



including its imino tautomeric form wherein the

group is in the syn configuration; the sulfoxide is in the β-configuration; R is hydrogen, sodium or potassium; and R_4 is hydrogen, sodium or potassium.

4. An antibacterial pharmaceutical composition comprising a pharmaceutically acceptable carrier and one or more antibacterially active compounds of claim 1.

4,237,129

DERIVATIVES OF THIAZOLIDINECARBOXYLIC ACIDS AND RELATED ACIDS

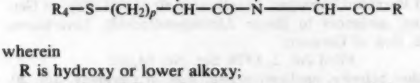
Miguel A. Ondetti, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 907,452, May 22, 1978, Pat. No. 4,192,878, which is a continuation-in-part of Ser. No. 836,107, Sep. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 747,281, Dec. 3, 1976, abandoned. This application Jun. 28, 1979, Ser. No. 53,135

Int. Cl.³ A61K *31/54;* C07D *279/06, 279/12*

U.S. Cl. 424—246 **14 Claims**

14. A method for reducing blood pressure which comprises administering a composition comprising a compound of the formula



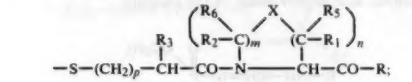
wherein

R is hydroxy or lower alkoxy;

R_1, R_2, R_5 and R_6 each is hydrogen or lower alkyl;

R_3 is hydrogen, lower alkyl or mercapto-lower alkylene;

R_4 is hydrogen, lower alkanoyl, benzoyl or



X is S, SO or SO_2;

m is 1, 2 or 3; n is 0, 1 or 2 and m+n is 3;

p is 0 or 1;

and basic salts thereof; wherein the terms lower alkyl, lower alkoxy and lower alkylene refer to groups having 1 to 7 carbon atoms and the term lower alkanoyl refers to groups having up to 7 carbon atoms.

4,237,130

2,3-DIHYDRO-6,7-DISUBSTITUTED-5-(SUBSTITUTED SULFONYL)BENZOFURAN-2-CARBOXYLIC ACIDS

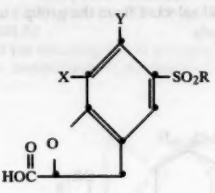
Edward J. Cragoe, Jr., and William F. Hoffman, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 21, 1979, Ser. No. 50,853

Int. Cl.³ A61K *31/535*; C07D *307/84*

U.S. Cl. 424—248.5 **13 Claims**

1. A compound of the formula:



wherein

X is halo, methyl or hydrogen

Y is halo, methyl or hydrogen

X and Y can be combined to form a hydrocarbylene radical of from 3 to 4 carbon atoms;

R is selected from the group consisting of

2-thienyl, 3-thienyl, 5-methyl-2-thienyl

3-methyl-2-thienyl,

4-methyl-2-thienyl, 2-methyl-3-thienyl

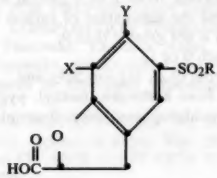
4-methyl-3-thienyl, 5-methyl-3-thienyl

5-acetamido-1,3,4-thiadiazolyl, 5-ethyl-1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 2-furanyl,

3-furanyl, 5-methyl-2-furyl, phenyl or substituted phenyl wherein the substituent is halo, methyl; trifluoromethyl or methoxy, benzyl or substituted benzyl wherein the substituent is halo, methyl, methoxy or trifluoromethyl and

the non-toxic pharmaceutically acceptable salt, lower alkyl ester and amino, loweralkylamino, diloweralkylamino, piperidino or morpholino derivative thereof.

13. A method of treatment of edema associated with hypertension comprising the administration of a therapeutically effective amount in unitary dosage of a compound having the formula of:



wherein

X is halo, methyl or hydrogen

Y is halo, methyl or hydrogen

X and Y can be combined to form a hydrocarbylene radical of from 3 to 4 carbon atoms;

R is selected from the group consisting of

2-thienyl, 3-thienyl, 5-methyl-2-thienyl,

3-methyl-2-thienyl, 4-methyl-2-thienyl,

2-methyl-3-thienyl,

4-methyl-3-thienyl, 5-methyl-3-thienyl,

5-acetamido-1,3,4-thiadiazolyl, 5-ethyl-1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 2-furanyl,

3-furanyl, 5-methyl-2-furyl, phenyl or substituted phenyl wherein the substituent is halo, methyl; trifluoromethyl or methoxy, benzyl or substituted benzyl wherein the substituent is halo, methyl, methoxy or trifluoromethyl, and

the non-toxic pharmaceutically acceptable salt, lower alkyl ester and amino, loweralkylamino, diloweralkylamino, piperidino or morpholino derivative thereof.

4,237,131

PROSTAGLANDIN ANALOGUES

Gordon Wootton, Sawbridgeworth, and Richard W. Moore, Harlow, both of England, assignors to Beecham Group Limited, Great Britain

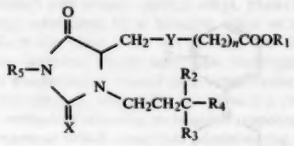
Filed Jun. 14, 1979, Ser. No. 48,516

Claims priority, application United Kingdom, Jun. 15, 1978, 27017/78

Int. Cl.³ C07D *413/06*; A61K *31/415*

U.S. Cl. 424—248.51 **32 Claims**

1. A compound selected from the group consisting of a hydantoin of the formula:



wherein

X is O or S;

Y is $-CH_2CH_2-$, $-CH=CH-$ or $-C\equiv C-$;

n has a value of from 1 to 5 inclusively;

R_1 is hydrogen, alkyl of 1 to 6 carbon atoms, phenyl, benzyl or tolyl;

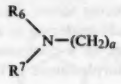
R_2 is hydrogen or alkyl of 1 to 4 carbon atoms;

R_3 is hydroxy, alkanoyloxy of 1 to 4 carbon atoms or benzyloxy;

R_4 is alkyl of 1 to 9 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, or alkyl of 1 to 6 carbon atoms substituted with cycloalkyl of 5 to 8 carbon atoms; and

R_5 is

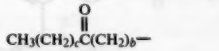
(i)



in which a has a value of from 0 to 3 inclusively and each of R_6 and R_7 taken independently of the other is hydrogen, alkyl of 1 to 4 carbon atoms or phenylalkyl of 7 to 10 carbon atoms or R_6 and R_7 taken together, together with the nitrogen atom to which they are joined are pyrrolidino, piperidino, morpholino or 4-alkylpiperazino wherein alkyl has from 1 to 4 carbon atoms;

(ii) allyl or propargyl;

(iii)



in which c+b has a value of from 1 to 5 and b is at least 1; or

(iv) R_8—S— in which R_8 is alkyl of 1 to 6 carbon atoms, unsubstituted phenyl or phenyl substituted with halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms or nitro,

and the alkali metal, alkaline earth metal, ammonium and substituted ammonium salts thereof when R_1 is hydrogen.

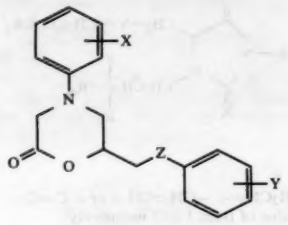
32. A method for the treatment of humans or animals of conditions responsive to natural prostaglandins, which comprises administering to to a human or animal in need thereof an effective amount of a compound according to claim **1**.

4,237,132
MORPHOLINONE DERIVATIVES AND METHOD OF USE

Hiromu Murai; Katsuya Ohata; Hiroshi Enomoto; Shoichi Chokai; Mitsuhiro Maehara; Katsuhide Saito, and Takayuki Ozaki, all of Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Filed Jun. 4, 1976, Ser. No. 692,879
Claims priority, application Japan, Jun. 6, 1975, 50-68925; Jun. 6, 1975, 50-68926
Int. Cl.[3] C07D *265/32;* A61K *31/535*
U.S. Cl. 424—248.52 15 Claims

1. A compound selected from the group consisting of a morpholinone of the formula:



wherein

Z is oxygen or sulfur;

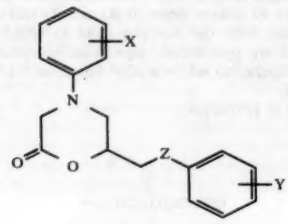
X is hydrogen, halogen, lower alkyl, lower alkoxy, carboxyl, or carbo(lower alkoxy) or carbamoyl;

Y is hydrogen, halogen or lower alkyl when Z is sulfur; and

Y is hydrogen, halogen, lower alkyl, lower alkoxy, benzyloxy, hydroxy, carboxy, carbo(lower alkoxy) or cyano when Z is oxygen;

and the pharmaceutically acceptable salts thereof when X or Y is carboxyl or X is carbamoyl.

15. A method of reducing serum cholesterol and triglycerides, which comprises administering to an animal or human in need thereof an amount of a compound selected from the group consisting of a morpholinone of the formula:



wherein

Z is oxygen or sulfur;

X is hydrogen, halogen, lower alkyl, lower alkoxy, carboxyl, or carbo(lower alkoxy) or carbamoyl;

Y is hydrogen, halogen or lower alkyl when Z is sulfur; and

Y is hydrogen, halogen, lower alkyl, lower alkoxy, benzyloxy, hydroxy, carboxy, carbo(lower alkoxy) or cyano when Z is oxygen;

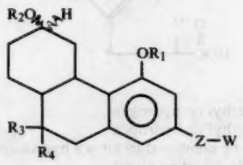
and the pharmaceutically acceptable salts thereof when X or Y is carboxyl or X is carbamoyl effective to reduce serum cholesterol and triglycerides.

4,237,133
1,9-DIHYDROXYOCTAHYDROPHENANTHRENES

Thomas H. Althuis, Groton; Charles A. Harbert, Waterford; Michael R. Johnson, and Lawrence S. Melvin, Jr., both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 851,503, Nov. 14, 1977, Pat. No. 4,188,495.
This application Sep. 24, 1979, Ser. No. 78,473
Int. Cl.[3] C07D *295/14;* C07C *101/19;* A61K *31/22, 31/535*
U.S. Cl. 424—248.52 10 Claims

1. A compound selected from the group consisting of those having the formula



wherein

R_1 is hydrogen, benzyl, benzoyl, alkanoyl of 1 to 5 carbon atoms or $—CO—(CH_2)_p—NR'R''$ wherein p is 0 or an integer from 1 to 4; each of R′ and R″ when taken individually is hydrogen or alkyl of 1 to 4 carbon atoms; R′ and R″ when taken together with the nitrogen to which they are attached form a 5- or 6-membered heterocyclic ring selected from piperidino, pyrollo, pyrrolidino, morpholino and N-alkylpiperazino having from 1 to 4 carbon atoms in the alkyl group;

R_2 is selected from hydrogen, alkanoyl of 1 to 6 carbon atoms and benzoyl;

R_3 is selected from hydrogen, methyl and ethyl;

R_4 is selected from hydrogen, alkyl of 1 to 6 carbon atoms and benzyl;

Z is selected from:

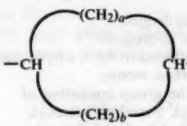
(a) alkylene having from one to nine carbon atoms;

(b) $-(alk_1)_m-X-(alk_2)_n-$ wherein each of (alk_1) and (alk_2) is alkylene having from 1 to 9 carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than 9;

m and n are each 0 or 1;

X is selected from O, S, SO and SO_2; and

W is selected from hydrogen, methyl, pyridyl, piperidyl, phenyl, monochlorophenyl, monofluorophenyl and



wherein W_1 is selected from hydrogen, phenyl, monochlorophenyl and monofluorophenyl; a is an integer from 1 to 5 and b is 0 or an integer from 1 to 4, with the proviso that the sum of a and b is not greater than 5 with the proviso that when R_1 is hydrogen, benzyl, benzoyl or said alkanoyl, W is pyridyl or piperidyl.

10. A process for producing analgesia in a mammal which comprises administering to the mammal an analgesia-producing quantity of a compound of claim 1.

4,237,134

DERIVATIVES OF THIAZOLIDINECARBOXYLIC ACIDS AND RELATED ACIDS

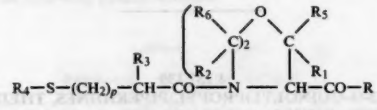
Miguel A. Ondetti, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 907,452, May 22, 1978, Pat. No. 4,192,878, which is a continuation-in-part of Ser. No. 836,107, Sep. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 747,281, Dec. 3, 1976, abandoned. This application Jun. 28, 1979, Ser. No. 53,020

Int. Cl.[3] C07D *413/12, 265/30;* A61K *31/535*

U.S. Cl. 424—248.52 10 Claims

10. A method for reducing blood pressure which comprises administering a composition comprising a compound of the formula



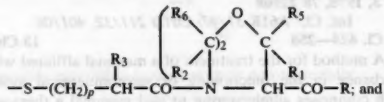
wherein

R is hydroxy or lower alkoxy;

R_1, R_2, R_5 and R_6 each is hydrogen or lower alkyl;

R_3 is hydrogen, lower alkyl or mercapto-lower alkylene;

R_4 is hydrogen, lower alkanoyl, benzoyl or



p is 0 or 1;

or a basic salt thereof; wherein the terms lower alkyl, lower alkoxy and lower alkylene refer to groups having 1 to 7 carbon atoms and the term lower alkanoyl refers to groups having up to 7 carbon atoms; and a pharmaceutically acceptable vehicle therefor.

4,237,135

2-(4-ETHYL-1-PIPERAZINYL)-4-PHENYLQUINOLINE, PROCESS FOR PREPARATION THEREOF, AND COMPOSITION THEREOF

Hitoshi Uno, Takatsuki; Yasutaka Nagai, Muko; Tadahiko Karasawa, Toyonaka, and Kiyoshi Furukawa, Ibaraki, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 22, 1979, Ser. No. 22,779

Claims priority, application Japan, Mar. 29, 1978, 53-37029

Int. Cl.[3] A61K *31/495;* C07D *401/04*

U.S. Cl. 424—250 9 Claims

1. 2-(4-Ethyl-1-piperazinyl)-4-phenylquinoline.

4. A pharmaceutical composition comprising an antidepressant effective amount of 2-(4-ethyl-1-piperazinyl)-4-phenylquinoline or a pharmaceutically acceptable acid addition salt thereof, and a pharmaceutically acceptable carrier.

4,237,136

PHARMACEUTICAL COMPOSITIONS AND METHODS OF USING THIADIAZOLO PYRIMIDINONE COMPOUNDS

Siegfried Herrling, Dohlenweg 33, Stolberg, Fed. Rep. of Germany (5190)

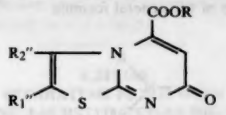
Filed Jun. 3, 1977, Ser. No. 803,296

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1976, 2625117; Jun. 4, 1976, 2625118

Int. Cl.[3] A61K *31/505;* C07D *513/04*

U.S. Cl. 424—251 34 Claims

1. A pharmaceutical drug composition useful as an immunostimulant for a mammal comprising a pharmaceutically acceptable carrier and, in an amount effective to cause an immune response in the mammal, the compound of the formula



in which

R is hydrogen or C_1 to C_5 alkyl;

R_4'' and R_2'' which are the same or different, are selected from the group consisting of hydrogen, C_1 to C_5 alkyl, benzyl, phenyl ethyl, phenyl, thienyl, pyridyl, C_5 to C_7 cycloalkyl and benzyl, phenyl ethyl, phenyl, thienyl or pyridyl substituted by a halogen, alkyl or alkoxy with C_1–C_4 in the alkyl, with the proviso that R_1'' and R_2'' cannot represent at the same time hydrogen, C_1 to C_5 alkyl, unsubstituted phenyl or a heterocyclic group; or a pharmaceutically acceptable salt of such a compound.

7. The method of inducing an immune response in a warm-blooded mammal which comprises administering to the mammal an effective amount to induce an immune response of a composition of claim 1.

4,237,137

SILA-SUBSTITUTED 1,4-DIHYDROPYRIDINE DERIVATIVES AND THEIR MEDICINAL USE

Reinhold Tacke; Anke Bentlage, both of Braunschweig; Robertson Towart, Wuppertal, and Wulf Vater, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

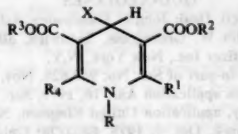
Filed Aug. 8, 1979, Ser. No. 64,936

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837477

Int. Cl.[3] C07D *403/04;* A61K *31/44*

U.S. Cl. 424—251 15 Claims

1. A compound of the formula



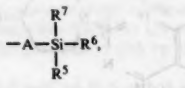
(I)

in which

R denotes a hydrogen atom or an alkyl or benzyl radical,

R^1 and R^4 are identical or different and denote a hydrogen atom or an alkyl or trifluoromethyl radical and

R^2 and R^3 are identical or different and denote a radical of the general formula



(Ia)

in which

A denotes an optionally C_1–C_4-alkyl-substituted C_1–C_6-alkylene radical and

R^5, R^6 and R^7 are identical or different and each denotes an alkyl, cycloalkyl or phenyl radical, and these radicals are, in turn, optionally substituted by alkyl, alkoxy, halogen or trifluoromethyl, or

one of the substituents R^2 or R^3 denotes a straight-chain or branched alkyl, cycloalkyl, alkenyl or alkynyl radical, and the alkyl radical, in turn, is optionally substituted by alk-

oxy or halogen, or by a phenyl radical which in turn optionally carries one or more substituents selected from trifluoromethyl, alkyl, alkoxy, halogen, nitro and alkylmercapto, or denotes an alkyl radical which is substituted by a group of the general formula

(Ib)

in which

R^8 and R^9 are identical or different and each denote a hydrogen atom or an alkyl, aryl or aralkyl radical, and

X denotes an alkyl, cycloalkyl, cycloalkenyl, aralkyl or aryl, and the aryl radical is optionally substituted by 1, 2 or 3 identical or different substituents selected from nitro, cyano, halogen, trifluoromethyl, amino, alkyl, alkoxy, and trifluoromethoxy or by SO_n-alkyl (n is 0, 1 or 2), or denotes an optionally alkyl-, alkoxy- or halogen-substituted quinolyl, isoquinolyl, pyridyl, pyrimidyl, thienyl, furyl or pyrryl radical, each of said alkyl, alkenyl, alkynyl, alkoxy, alkylmercapto and alkylsulphonyl groups having up to 7 carbon atoms, each of said cycloalkyl groups having 3 to 7 ring carbon atoms, each of said cycloalkenyl groups having 5 to 7 ring carbon atoms, each aryl group being mono- or bi-cyclic carbocyclic aryl having 6 to 10 carbon atoms and each aralkyl group being mono- or bi-cyclic carbocylic aryl having 6 to 10 carbon atoms in the aryl portion and 1 to 4 carbon atoms in the alkyl portion.

8. A method of combating circulatory diseases in warm-blooded animals which comprises administering to the said animals an active compound according to claim **1** either alone or in admixture with a diluent or in the form of a medicament.

4,237,138

ANTIHYPERTENSIVE 4-AMINO-2-[4-(SUBSTITUTED-ALKOXY)PIPERIDINO)]-QUINAZOLINES

Simon F. Campbell, Deal; John C. Danilewicz, Ash, Nr. Canterbury, and Colin W. Greengrass, Sandwich, all of England, assignors to Pfizer Inc., New York, N.Y.

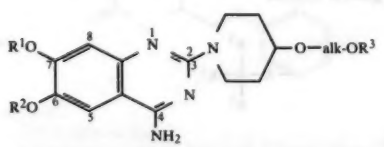
Continuation-in-part of Ser. No. 960,628, Nov. 14, 1978, abandoned. This application Apr. 16, 1979, Ser. No. 30,003

Claims priority, application United Kingdom, Nov. 16, 1977, 47583/77; Denmark, Oct. 4, 1978, 4403/78; United Kingdom, Jan. 31, 1979, 03398/79

Int. Cl.[3] **A61K** *31/505;* **C07D** *401/04*

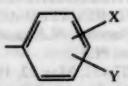
U.S. Cl. 424—251 **11 Claims**

1. A compound selected from the group consisting of those of the formula



(I)

and the pharmaceutically-acceptable acid addition salts thereof, wherein R^1 and R^2 are selected from the group consisting of C_{1-4} alkyl and $-CH_2CF_3$; alk is selected from the group consisting of ethylene, monophenyl substituted ethylene, mono- and dimethyl substituted ethylene, and monophenyl-monomethyl substituted ethylene; and R^3 is selected from the group consisting of hydrogen, C_{1-4} alkyl, C_3–C_6 cycloalkyl, and



wherein each of X and Y is selected from the group consisting of hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, halogen, CF_3, $-CONR^4R^5$ and $-SO_2NR^4R^5$ wherein each of R^4 and R^5 is selected from the group consisting of hydrogen and C_{1-4} alkyl.

10. A pharmaceutical composition comprising an antihypertensive amount of a compound of claim **1** together with a pharmaceutically acceptable diluent or carrier.

4,237,139

4-(3-(4-QUINOLYL)PROPYL)PIPERIDINES, THEIR PREPARATION AND THEIR USE AS MEDICINES

Alain A. Champseix, Forges les Bains; Claude G. A. Gueremy, Houilles, and Gerard R. Le Fur, Villeneuve la Garenne, all of France, assignors to Pharmindustrie, Gennevilliers, France

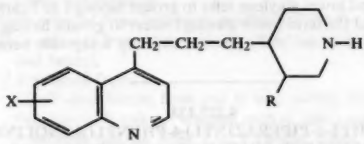
Continuation-in-part of Ser. No. 806,418, Jun. 14, 1977, abandoned. This application Dec. 12, 1978, Ser. No. 968,718

Claims priority, application France, Jun. 18, 1976, 76 18555; Aug. 3, 1978, 78 22968

Int. Cl.[3] **A61K** *31/47;* **C07D** *211/32, 401/06*

U.S. Cl. 424—258 **15 Claims**

1. A method for the treatment of a mammal afflicted with a disturbance in the functioning of serotoninergical systems which comprises administering to said mammal a therapeutically effective amount of a compound of the formula



(I)

wherein R is hydrogen, alkyl having 1 to 4 carbon atoms or alkenyl having 2 to 4 carbon atoms;

X is hydrogen or halogen, alkyl, alkoxy or alkylthio having 1 to 4 carbon atoms, trifluoromethyl, nitro, hydroxy, amino or amino substituted by one or two alkyl groups having 1 to 4 carbon atoms, by acyl having 1 to 4 carbon atoms or by alkylsulphonyl group having 1 to 4 carbon atoms, or a pharmaceutically acceptable salt thereof in a pharmaceutically acceptable carrier therefor.

4,237,140

ANALGESIC MIXTURE OF NALBUPHINE AND ACETAMINOPHEN

John R. Dudzinski, East Northport, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 18, 1979, Ser. No. 40,281

Int. Cl.[2] **A61K** *31/165, 31/485*

U.S. Cl. 424—260 **12 Claims**

1. A pharmaceutical composition consisting essentially of (a) nalbuphine or a pharmaceutically suitable acid addition salt thereof and (b) acetaminophen in a weight ratio of (a) to (b) of from about 1:2 to about 1:70.

4,237,141
DERIVATIVES OF α-METHYL-β-AMINOPROPIOPHENONE AND USE THEREOF

Akira Shiozawa, Tokyo; Shuji Kurashige, Urawa; Hiroaki Hamano, Higashimurayama; Yasuhiko Furuta, Tokyo; Masako Ikeda, Mitaka; Hiroshi Miyazaki, Kawasaki; Chiyoko Aoyagi, Urawa, and Yasuo Ishii, Kashiwa, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

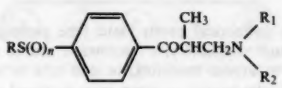
Filed May 26, 1978, Ser. No. 910,024

Claims priority, application Japan, Jun. 2, 1977, 52/63969; Jun. 2, 1977, 52/63970

Int. Cl.³ C07D *295/10*; A61K *31/445*

U.S. Cl. 424—267 **7 Claims**

1. α-methyl-β-aminopropiophenone derivatives represented by the following general formula:



wherein $RS(O)_n$-represents methylthio, ethylthio, methylsulfonyl or n-butyl-sulfonyl and

represents piperidino as well as their non-toxic salts.

4,237,142
COMBATING FUNGI WITH 2-CARBAMOYLOXY-3,3-DIMETHYL-1-PHENOXY-1-(1,2,4-TRI AZOL-1-YL)-1-BUTANES

Karl H. Büchel; Wolfgang Krämer, both of Wuppertal, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

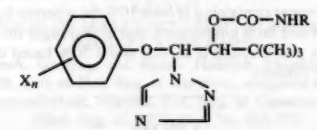
Filed Dec. 20, 1978, Ser. No. 971,291

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1978, 2800544

Int. Cl.³ A01N *43/64*; C07D *249/08*

U.S. Cl. 424—269 **9 Claims**

1. A 2-carbamoyloxy-3,3-dimethyl-1-phenoxy-1-(1,2,4-triazol-1-yl)-butane of the formula



in which

R is halogenoalkyl with up to 4 carbon atoms and up to 5 halogen atoms, alkoxycarbonyl with 1–4 carbon atoms in the alkyl part, alkoxyalkyl with 1 to 4 carbon atoms in each alkyl part, alkylsulphonyl-alkenyl-carbamoyl with 1 to 4 carbon atoms in the alkyl part and 2 to 4 carbon atoms

X each independently is halogen, amino, cyano, nitro, alkyl with up to 4 carbon atoms, cycloalkyl with 5 to 7 carbon atoms, halogen-alkyl with up to 2 carbon atoms and up to 5 halogen atoms, alkoxy with 1 to 2 carbon atoms, phenyl, phenoxy, phenyl or phenoxy substituted by halogen, amino, cyano, nitro or alkyl with 1 to 2 carbon atoms, or phenyl-alkyl with 1 or 2 carbon atoms in the alkyl part which is optionally substituted in the phenyl by halogen, nitro or cyano, and

n is 0, 1, 2, 3, 4 or 5.

7. A fungicidal composition containing as active ingredient a fungicidally effective amount of a compound according to claim 1 in admixture with a diluent.

4,237,143
COMBATING FUNGI WITH 2-METHYLENE-3-SUBSTITUTED-4,5-BIS-TRIFLUORO-METHYL IMINO-THIAZOLIDINES

Klaus Grohe, Odenthal; Hans-Joachim Scholl, Cologne; Volker Paul, Solingen; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

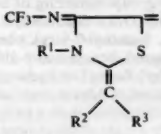
Filed Feb. 5, 1979, Ser. No. 9,564

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808227

Int. Cl.³ C07D *277/04*

U.S. Cl. 424—270 **7 Claims**

1. A compound of the formula



in which

R^1 represents an alkyl, alkenyl or alkynyl radical with up to 6 carbon atoms, which radical can be substituted by cyano or an alkoxy or alkylmercapto group with in either case up to 3 carbon atoms, or represents cycloalkyl with 5 to 6 carbon atoms, which is optionally substituted by alkyl with 1 to 3 carbon atoms, or represents aryl with up to 10 carbon atoms or aralkyl with up to 10 carbon atoms in the aryl part and 1 or 2 carbon atoms in the alkyl part, the aryl radicals mentioned being optionally substituted by halogen, cyano, nitro or alkyl, alkoxy or alkylmercapto with in each case up to 3 carbon atoms, or represents an amino group $—NR^4R^5$, wherein

R^4 and R^5 each independently represents alkyl with 1 to 12 carbon atoms or, together with the connecting nitrogen atom and optionally one or more further hetero-atoms selected from oxygen, sulphur and nitrogen, form a heterocyclic ring with 5 to 7 ring atoms,

R^2 represents hydrogen, cyano or an acyl group with a total of up to 10 carbon atoms, and

R^3 represents cyano, or represents an acyl group with a total of up to 10 carbon atoms, alkylsulphonyl with up to 6 carbon atoms or arylsulphonyl with up to 10 carbon atoms in the aryl part, which aryl part is optionally substituted by alkyl with up to 3 carbon atoms and/or nitro and/or halogen, or represents an amide or thioamide group comprising the radical $CO—NR^6R^7$ or $CS—NR^6R^7$, in which

R^6 represents hydrogen or alkyl with up to 4 carbon atoms, and

R^7 represents alkyl with up to 6 carbon atoms, cycloalkyl with 5 or 6 carbon atoms or phenyl, which phenyl can be substituted by halogen, nitro or alkyl, alkoxy or alkylmercapto with in each case up to 4 carbon atoms, or

R^2 and R^3, together with the connecting carbon atom, represent an α-cycloalkanone ring system with 5 or 6 carbon atoms which is optionally substituted by alkyl with up to 3 carbon atoms.

5. A fungicidal composition containing as active ingredient a fungicidally effective amount of a compound according to claim 1 in admixture with a diluent.

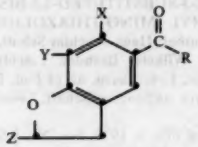
4,237,144

2,3-DIHYDRO-2,6,7-TRISUBSTITUTED-5-ACYLBENZOFURANS

Edward J. Cragoe, Jr., and William F. Hoffman, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

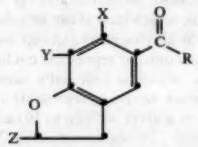
Filed Jun. 21, 1979, Ser. No. 50,852
Int. Cl.³ A61K *31/425*; C07D *285/10, 307/83*
U.S. Cl. 424—270 **11 Claims**

1. A compound of the formula:



wherein
X is halo or methyl;
Y is halo, methyl or hydrogen;
X and Y can be combined to form a hydrocarbylene radical of from 3 to 4 carbon atoms;
R is selected from the group consisting of 2-thienyl, 3-thienyl, 5-methyl-2-thienyl, 1,2,5-thiadiazolyl, 3-methyl-1,2,5-thiadiazolyl, 2-furyl, 5-methyl-2-furyl, phenyl, p-methoxyphenyl, p-chlorophenyl, benzyl and p-chlorobenzyl and
Z is acetyl, aminomethyl, formyl or hydroxymethyl.

11. A method of treatment of edema associated with hypertension comprising the administration to a patient of from 0.01 mg. to 10 mg./kg. of body weight of the patient of a compound having the formula:



wherein
X is halo or methyl;
Y is halo, methyl or hydrogen;
X and Y can be combined to form a hydrocarbylene radical of from 3 to 4 carbon atoms;
R is selected from the group consisting of 2-thienyl, 3-thienyl, 5-methyl-2-thienyl, 1,2,5-thiadiazolyl, 3-methyl-1,2,5-thiadiazolyl, 2-furyl, 3-furyl, 5-methyl-2-furyl, phenyl, p-methoxyphenyl, p-chlorophenyl, benzyl and p-chlorobenzyl and
Z is acetyl, aminomethyl, formyl or hydroxymethyl.

4,237,145

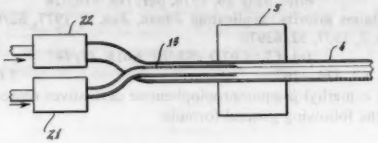
METHOD OF PREPARING FOODSTUFFS CONTAINING COAGULATING PROTEINS AND A DEVICE FOR PERFORMING THE METHOD

Per O. G. Risman, Huskvarna, and Nils E. Bengtsson, Mölnlycke, both of Sweden, assignors to Husqvarna Aktiebolag, Huskvarna, Sweden

Filed Jan. 29, 1979, Ser. No. 7,420
Claims priority, application Sweden, Feb. 3, 1978, 7801280
Int. Cl.³ A23L *3/30*
U.S. Cl. 426—241 **7 Claims**

1. Method of preparing foodstuffs from a mass containing protein which coagulate during heating to impart hard consistency to the product, comprising the steps: pumping a paste of the mass enclosed in a tube transparent to microwaves to move the mass forward and to form it to an extrusion mass, exposing the extrusion mass to microwaves in at least one TM_{021} applicator and discharging the exposed mass from the tube and transporting it therefrom in solid state, said step of exposing comprising exposing the extrusion mass in the TM_{021} applicator to give maximum heat intensity in the center of a cross section through the extrusion mass and minimum intensity in the periphery of the cross section, and further comprising supplying a lubricant to the contact surface between the extrusion mass and the inner wall of the tube.

5. An apparatus for preparing foodstuffs comprising a tube transparent to microwave energy, means for pumping foodstuffs through said tube, a TM_{021} applicator comprising a



substantially cylindrical cavity, said tube passing generally axially through said cavity, a microwave source coupled to said cavity to expose foodstuffs in said tube to microwave energy, said tube having an inner cross sectional radius such that a given frequency of the microwave source the conditions for producing TM_{021} resonance in the cavity are satisfied, and means at each end of said cavity for radially adjusting the position of said tube, and further comprising means coupled to said tube for applying a lubricant to the contact surface between the inner walls of said tube and any foodstuffs therein.

4,237,146

FREEZER SOFT INTERMEDIATE-MOISTURE FOOD DRESSING

Marvin L. Kahn, Williamsville, and Kuttikandathil E. Eapen, Kenmore, both of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Division of Ser. No. 917,379, Jun. 20, 1978, Pat. No. 4,154,863, Ser. No. 871,995, Jan. 24, 1978, and Ser. No. 763,613, Jan. 28, 1977, Pat. No. 4,146,652. This application Mar. 26, 1979, Ser. No. 24,130
Int. Cl.³ A23L *1/24*
U.S. Cl. 426—330 **12 Claims**

1. A microbiologically stable food dressing comprising water, sugar, flavoring and at least one of fructose and unsaturated fat, wherein the product is substantially non-crystalline at freezer temperatures and comprises about from 15 to 55% water, sugar in a ratio to water of about from 0.8–2:1 and a minor but effective amount of flavoring, provided that the solutes content is adequate to provide the product with a water activity of about 0.8 to 0.9, the amount of fat is less than the amount of water containing at least 10% fat wherein from 50% to 100% of said fat is unsaturated, and in said sugar the amount of dextrose plus fructose is at least about 50% based upon the total sugar content.

4,237,147

STABILIZED AMORPHOUS CALCIUM CARBONATE

Helmut L. Merten, Ladue, and Gerald L. Bachman, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 112,446, Feb. 3, 1971, abandoned. This application Jan. 4, 1974, Ser. No. 431,002
Int. Cl.³ A23L *2/40*
U.S. Cl. 426—590 **8 Claims**

1. A dry carbonated beverage concentrate for preparing a carbonated beverage by admixture with water comprising:
a. amorphous calcium carbonate, substantially devoid of calcium hydroxide, and
b. an anhydrous, nontoxic acid in an amount in excess of the amount theoretically required to completely evolve the carbon dioxide from the amorphous calcium carbonate.

4,237,148

METHOD OF VAPORIZING ALLOYS OF METALS HAVING DIFFERENT VAPOR PRESSURES

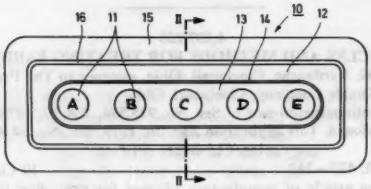
Hans Aichert, Hanau am Main; Otto-Horst Hoffman, Rodenbach, and Herbert Stephan, Bruchköbel, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Köln, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 964,093

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826165

Int. Cl.[2] C23C *13/02*

U.S. Cl. 427—42 3 Claims



1. Method for vaporizing oxidation and corrosion inhibiting alloys including alloys from the group of CoCrAlY and NiCoCrAlY containing metals having different vapor pressures from elongated vaporizing crucibles which are fed with alloy to be vaporized in rod form at several points distributed over the length of the crucible by direct bombardment of the alloy bath surface with electron beams periodically deflected according to a pattern for the vapor deposition of a coating of the alloy material on a plurality of metal substrates positioned in a vacuum coating chamber above the vaporizing crucible which comprises regulating the proportional composition of the alloy to be vaporized differently over the length of the vaporizing crucible such that the alloy component with the lowest boiling point or with the highest vapor pressure is in a smaller proportion in the alloy to be vaporized which is fed to the center of the vaporizing crucible than in the alloy fed to the ends of the vaporizing crucible.

4,237,149

METHOD OF MANUFACTURING MOLDED AND IMPREGNATED PARTS

Hans Denk, Gauting, and Reiner Habrich, Heimstetten near Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 21, 1978, Ser. No. 935,103

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1977, 2738890

Int. Cl.[2] B05D *5/12;* B29B *3/00;* H02G *13/08*

U.S. Cl. 427—58 8 Claims

1. A method for casting-in or impregnating electrical components and for casting with epoxy resin compositions, comprising applying to a mold or component to be impregnated a reactive epoxy resin composition, comprised of an epoxy resin and a tertiary amine, at a temperature in the range of from about 120° C. to about 180° C., and hardening said resin composition at a temperature in the range of from about 80° C. to about 110° C., wherein said epoxy resin composition hardens more slowly in the temperature range of from about 120° C. to about 180° C. than at temperatures in the range of from about 80° C. to about 110° C.

4,237,150

METHOD OF PRODUCING HYDROGENATED AMORPHOUS SILICON FILM

Harold J. Wiesmann, Wantagh, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 18, 1979, Ser. No. 30,974

Int. Cl.[3] C01B *33/02*

U.S. Cl. 427—74 7 Claims

1. A method of producing hydrogenated amorphous silicon which comprises thermally decomposing a silicohydride gas by directing a stream of said silicohydride gas against a tungsten or carbon foil heated to a temperature of about 1400°–1600° C. and in a vacuum of about 10^{-6} to 10^{-4} torr, to form a gaseous mixture of atomic hydrogen and atomic silicon, and depositing said gaseous mixture onto a substrate independent of and situated a distance from said heated tungsten or carbon foil, to form a film of hydrogenated amorphous silicon on said substrate.

4,237,151

THERMAL DECOMPOSITION OF SILANE TO FORM HYDROGENATED AMORPHOUS SI FILM

Myron Strongin, Center Moriches; Arup K. Ghosh, Rocky Point; Harold J. Wiesmann, Wantagh, all of N.Y.; Edward B. Rock, Oxford, United Kingdom, and Harry A. Lutz, III, Midlothian, Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D. C. 20545

Filed Jun. 26, 1979, Ser. No. 52,278

Int. Cl.[3] C01B *33/02*

U.S. Cl. 427—74 5 Claims

1. A method of producing hydrogenated amorphous silicon which comprises thermally decomposing a silicohydride gas in a tungsten tube heated to a temperature of about 1700°–2300° C. and under a vacuum of about 10^{-8} to 10^{-4} torr to form a gaseous mixture of atomic hydrogen and atomic silicon, and depositing said gaseous mixture onto a substrate situated outside said heated tungsten tube by directing a stream of said gaseous mixture at said substrate, to form a film of hydrogenated amorphous silicon on said substrate.

4,237,152

PROCESS FOR IMPROVING THE RESISTANCE OF ASPHALT PAVEMENT SURFACES TO CORROSION, DETERIORATION AND DISINTEGRATION

Domingos Loricchio; Orlando M. Lomonaco, and Luiz M. Lomonaco, all of Brazil

Continuation of Ser. No. 552,048, Feb. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 418,774, Nov. 23, 1973, abandoned. This application Apr. 4, 1977, Ser. No. 784,606

Claims priority, application Brazil, Nov. 29, 1972, 8378

Int. Cl.[2] B05C *1/16;* B05D *5/10;* E01C *5/00*

U.S. Cl. 427—136 12 Claims

1. A process for improving the resistance of the surface of an asphalt pavement to corrosion, deterioration and disintegration which consisting of the step of applying directly to the pavement a liquid composition consisting of at least one cured resin, a solvent for said resin and having dispersed therein finely divided particles of solid inorganic substances having a hardness between about 8.5 and 9.5 on the Mohs scale, said composition being applied to the pavement in a quantity sufficient to form a coating on the pavement which is firmly anchored thereto due to the impregnation of the pavement by the resin.

7. A process according to claim 1, wherein said resin is at least one member selected from the group consisting of phenol-formaldehyde resins, epoxy-modified phenol-formaldehyde resins, poly(methylmethacrylate) resins, polyester resins, poly(vinyl chloride) resins and polystyrene resins.

4,237,153

METHOD OF STRIPPING AND REPAINTING ETHYLENE-PROPYLENE-NON-CONJUGATED-DIENE RUBBER PARTS

Ronald S. Hendricks, Ada, Okla., assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 621,721, Oct. 14, 1975, abandoned. This application Nov. 4, 1976, Ser. No. 738,932

Int. Cl.[2] B08B *3/08, 3/10*

U.S. Cl. 427—140 **6 Claims**

1. A method of removing paint from and repainting ultra violet light-benzophenone treated ethylene-propylene-non-conjugated diene rubber parts consisting essentially of:

A. immersing the parts in 100 parts of a solution consisting essentially of:

(a) from about 50 to 99 parts of sulfuric acid

(b) from about 0.1 parts to 10 parts of a surfactant

(c) from about 0.9 to 40 parts of water

B. maintaining the parts in the solution at a temperature of 100° F. to 200° F. for from 10 to 40 minutes

C. removing the parts from the solution

D. rinsing the solution from the parts with water

E. drying the parts

F. repainting the parts in the absence of an ultra violet light benzophenone treatment after the immersion.

4,237,154

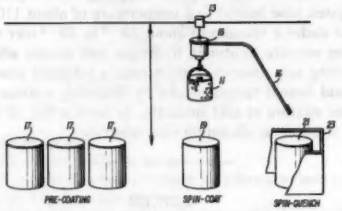
IMPROVED GALVANIZING METHOD [AND APPARATUS]

William H. Garrison, P.O. Box 9256, Bellevue Station, Richmond, Va. 23227

Filed Aug. 16, 1979, Ser. No. 66,969

Int. Cl.[3] C23C *1/02*

U.S. Cl. 427—241 **7 Claims**



1. A method of spin-galvanizing articles comprising the steps of:

placing said articles in a perforate container;

suspending said container from a reversible fluid motor, said motor being suspended from a travelling crane;

transporting said reversible fluid motor and perforate container by said travelling crane above a work path where at selected locations along the work path said perforate container is lowered into and raised from pre-coating tanks while being spun first in one direction, stopped, and spun in a reverse direction about a vertical axis;

transporting said reversible fluid motor and said perforate container to a selected position along the work path where said perforate container is lowered into a molten zinc bath while spinning said perforate container and said articles first in one direction, stopping, and then spinning in a reverse direction about a vertical axis to coat articles on all sides and edges;

raising said perforate container from said zinc bath while continuing to spin said perforate container first in one direction, stopping, and then spinning in a reverse direction about said vertical axis to remove excess zinc therefrom before undesired zinc build-up occurs;

rapidly transporting said reversible fluid motor and said perforate container with the zinc-coated articles to a selected position along the work path where the container is continually spun first in one direction, stopped, and spun in a reverse direction as it is lowered into a quench tank while said articles are still at sufficiently high temperature that said articles do not stick together;

raising said perforate container from said quench tank while continuing to spin said perforate container and said zinc coated articles first in one direction, stopping and then spinning in a reverse direction about a vertical axis until dry to free said articles from water staining; and,

transporting said reversible fluid motor and said perforate container with the zinc-coated articles above a work path to a selected location where said zinc coated articles are removed from said perforate container.

4,237,155

ARTICLES AND METHODS FOR TREATING FABRICS

Nabil G. Kardouche, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

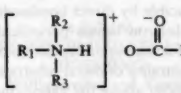
Continuation-in-part of Ser. No. 925,594, Jul. 17, 1978, abandoned. This application Apr. 30, 1979, Ser. No. 34,801

Int. Cl.[3] B05D *3/12*

U.S. Cl. 427—242 **19 Claims**

1. An article of manufacture adapted for providing fabric softening within an automatic clothes dryer, said article comprising:

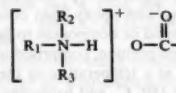
(a) a fabric softening amount of a fabric softening composition comprising from about 5% to about 100% of a carboxylic acid salt of a tertiary amine having the formula



wherein R_1 is a long chain aliphatic group containing from 12 to 22 carbon atoms and R_2 and R_3 can be the same or different from each other and are selected from the group consisting of aliphatic groups containing from 1 to 22 carbon atoms, hydroxyalkyl groups of the formula $-R_4OH$ wherein R_4 is an alkylene group of 1 to 3 carbon atoms, and alkyl ether groups of the formula $R_5O(C_nH_{2n}O)_m-$ wherein R_5 is selected from the group consisting of alkyl and alkenyl of from 1 to 20 carbon atoms and hydrogen, n is 2 or 3 and m is from 1 to 20, and wherein R_6 is selected from the group consisting of unsubstituted alkyl, alkenyl, aryl, alkaryl and aralkyl of 11 to 21 carbon atoms, and substituted alkyl, alkenyl, aryl, alkaryl, and aralkyl of from 11 to 21 carbon atoms wherein the substituents are selected from the group consisting of halogen, carboxyl, and hydroxyl, said composition having a melting point between about 35° C. and about 100° C.; and

(b) a dispensing means which provides for release of said softening composition to fabrics within an automatic laundry dryer at dryer operating temperatures.

11. A method for imparting a softening and antistatic effect to fabrics in an automatic clothes dryer comprising tumbling said fabrics under heat in said dryer with an effective amount of a fabric softening composition comprising from 5% to 100% of a tertiary amine salt of the formula



wherein R_1 is a long chain aliphatic group containing from 12 to 22 carbon atoms R_2 and R_3 can be the same or different from each other and are selected from the group consisting of aliphatic groups containing from 1 to 22 carbon atoms, hydroalkyl groups of the formula $-R_4OH$ wherein R_4 is an alkylene

group of 1 to 3 carbon atoms, and alkyl ether groups of the formula $R_5O(C_nH_{2n}O)_m$— wherein R_5 is selected from the group consisting of alkyl and alkenyl of from 1 to 22 carbon atoms and hydrogen, n is 2 or 3 and m is from 1 to 20, and wherein R_6 is selected from the group consisting of unsubstituted alkyl, alkenyl, aryl, alkaryl and aralkyl of 11 to 21 carbon atoms, and substituted alkyl, alkenyl, aryl, alkaryl, and aralkyl of from 11 to 21 carbon atoms wherein the substituents are selected from the group consisting of halogen, carboxyl, and hydroxyl, said composition having a melting point between about 35° C. and about 100° C.

4,237,156

FLUORINATED POLY(ARYLENE SULFIDES)

Harold D. Boultinghouse, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 17, 1978, Ser. No. 961,896

Int. Cl.[2] B32B *27/06*; B05D *3/04*

U.S. Cl. 427—255.1 **6 Claims**

1. A process for treating a poly(arylene sulfide) surface which consists essentially of contacting said surface with a fluorine-containing gas under a temperature and for a period of time sufficient to render said surface water-wettable and receptive to a second material including adhesives, coatings, paints and the like.

4,237,157

PROCESS FOR MAKING FIRE RETARDANT POLYPROPYLENE

Henry Hancock, 5 Laurel Trail, Kinnelon, N.J. 07405

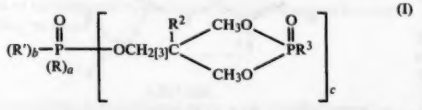
Division of Ser. No. 829,890, Sep. 1, 1977, Pat. No. 4,139,476. This application May 5, 1978, Ser. No. 903,035

Int. Cl.[2] C09K *3/28*

U.S. Cl. 427—352 **8 Claims**

1. A method for making a flame retardant polypropylene comprising:

a. providing an aqueous bath comprising 25 to 75% of a phosphonate ester of the following formula:



(I)

wherein a is 0, 1 or 2, b is 0, 1 or 2, c is 1, 2 or 3 and a+b+c is 3; R and R′ are the same or dissimilar and are alkyl, alkoxy, aryl, aryloxy, alkaryl, alkaryloxy, aralkyl, aryloxyakloxy, or aralkoxy, wherein the alkyl portion of these groups may contain hydroxyl but no halogen and the aryl portion may contain chlorine bromine and hydroxyl groups; R^2 is alkyl, hydroxyalkyl, or aryl; R^3 is lower alkyl (C_1–C_4); and about 1 to 10% of a penetrant for the polypropylene;

b. passing the polypropylene through the bath so as to pick up the bath composition; and

c. removing substantially all the water from the fabric which comprises:

(i) extracting the latent bath composition from the polypropylene and then

(ii) drying the polypropylene in an oven.

4,237,158

1-SUBSTITUTED ARALKYL IMIDAZOLES AND THEIR USE AS FUNGICIDES

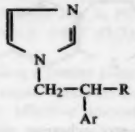
George A. Miller, Maple Glen, and Ronald P. Owen, Warminster, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 642,041, Dec. 8, 1975, Pat. No. 4,105,762, which is a continuation-in-part of Ser. No. 547,291, Feb. 5, 1975, abandoned. This application Nov. 12, 1976, Ser. No. 741,442

Int. Cl.[3] C07D *233/60*; A01N *9/22*

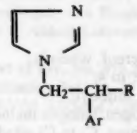
U.S. Cl. 424—273R **13 Claims**

1. A chemical compound selected from the group consisting of an imidazole derivative having the formula



and the active acid addition salts thereof wherein Ar is a member selected from the group consisting of phenyl, mono-, di- and trihalophenyl, methylphenyl, ethylphenyl, methoxyphenyl, ethoxyphenyl, nitrophenyl and trihalomethylphenyl, and R is a member selected from the group consisting of (C_1–C_{10}) alkyl, cycloalkyl, alkenyl, cycloalkenyl and aralkyl, said aryl being a member selected from the group consisting of phenyl, mono-, di- and trihalophenyl, methylphenyl, ethylphenyl, methoxyphenyl, ethoxyphenyl, nitrophenyl and trihalomethylphenyl, provided that when Ar is unsubstituted phenyl then R is (C_4–C_{10}) alkyl, cycloalkyl, alkenyl, cycloalkenyl and arylalkyl, said aryl being a member selected from the group consisting of phenyl, mono-, di- and trihalophenyl, methylphenyl, ethylphenyl, methoxyphenyl, ethoxyphenyl, nitrophenyl and trihalomethylphenyl,

10. A method for controlling phytopathogenic fungi which comprises applying to a plant, to plant seeds or to the plant habitat an effective amount of a compound of the formula:



and the active acid addition salts thereof wherein Ar is a member selected from the group consisting of phenyl, mono-, di- and trihalophenyl, methylphenyl, ethylphenyl, methoxyphenyl, ethoxyphenyl, nitrophenyl and trihalomethylphenyl, and R is a member selected from the group consisting of (C_1–C_{10}) alkyl, (C_3–C_7) cycloalkyl, (C_2–C_{12}) alkenyl, (C_5–C_7) cycloalkenyl and (C_7–C_9) aralkyl, said aryl being a member selected from the group consisting of phenyl, mono-, di- and trihalophenyl, methylphenyl, ethylphenyl, methoxyphenyl, ethoxyphenyl, nitrophenyl and trihalomethylphenyl.

4,237,159

NOVEL ANTI-INFLAMMATORY COMPOSITION

Laurence B. Katz, A901 Presidential Apts., City Line Ave. & Presidential Blvd., Philadelphia, Pa. 19131

Filed Nov. 19, 1979, Ser. No. 95,235

Int. Cl.[3] A61K *31/40*

U.S. Cl. 424—274 **4 Claims**

1. A pharmaceutical composition useful for treating inflammation in humans and animals which comprises indomethacin and cinanserin in oral dosage form, each dosage unit of which

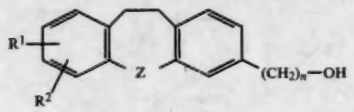
contains from 20 to 200 mg. of indomethacin and from 5 to 100 mg. of cinanserin.

4,237,160
3-HYDROXYMETHYLDIBENZO[B,F]THIEPINS AS PROSTAGLANDIN ANTAGONISTS

Pierre A. Hamel, Laval, and Joshua Rokach, Chomedey-Laval, both of Canada, assignors to Merck Sharp & Dohme (I.A.) Corp., Rahway, N.J.

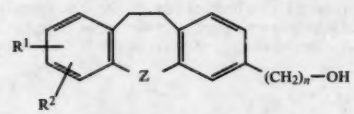
Filed Nov. 27, 1979, Ser. No. 97,755
Int. Cl.[3] A61K *31/38*; C07D *337/14*
U.S. Cl. 424—275 **22 Claims**

1. A compound of the formula:



or an ester or acetal thereof, wherein
n is an integer from 1 to 4;
Z is thio, sulfinyl, or sulfonyl;
R^1 and/or R^2 is hydrogen, halogen including chloro, bromo, fluoro and iodo, amino, C_1 to C_4 alkyl, C_1 to C_4 alkanoyl, hydroxyl, C_1 to C_4 alkoxy, thiol, C_1 to C_4 alkylthio, C_1 to C_4 alkylsulfinyl, C_1 to C_4 alkylsulfonyl, trifluoromethyl, trifluoromethylthio, cyano, nitro, and C_1 to C_4 alkyl or dialkylamino, aralkyl including benzyl and phenethyl, hydroxyalkyl as CH_3CHOH; and
the dotted line indicates either an olefinic bond or saturation at the 10-, 11-position.

17. A composition for treating undesirable contractile activity of prostaglandins consisting essentially of a pharmaceutically acceptable carrier and a therapeutically effective amount of a compound of the formula:



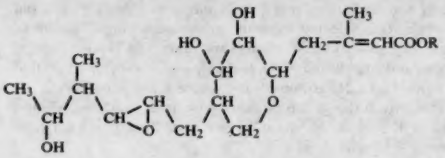
or an ester or acetal thereof, wherein
n is an integer from 1 to 4;
Z is thio, sulfinyl, or sulfonyl;
R^1 and/or R^2 is hydrogen, halogen including chloro, bromo, fluoro and iodo, amino, C_1 to C_4 alkyl, C_1 to C_4 alkanoyl, hydroxyl, C_1 to C_4 alkoxy, thiol, C_1 to C_4 alkylthio, C_1 to C_4 alkylsulfinyl, C_1 to C_4 alkylsulfonyl, trifluoromethyl, trifluoromethylthio, cyano, nitro, and C_1 to C_4 alkyl or dialkylamino, aralkyl including benzyl and phenethyl, hydroxyalkyl as CH_3CHOH; and
the dotted line indicates either an olefinic bond or saturation at the 10-, 11-position.

4,237,161
ANTIBACTERIAL COMPOUNDS

Kong Luk, Cranleigh; John P. Clayton, Horsham, and Norman H. Rogers, Rudgwick, all of England, assignors to Beecham Group Limited, Great Britain

Division of Ser. No. 873,394, Jan. 30, 1978, Pat. No. 4,166,863, which is a division of Ser. No. 803,466, Jun. 6, 1977, Pat. No. 4,102,901. This application Aug. 7, 1978, Ser. No. 931,385
Claims priority, application United Kingdom, Jun. 15, 1976, 24712/76; Sep. 29, 1976, 40472/76; Mar. 1, 1977, 86471/77
Int. Cl.[3] A61K *31/35*
U.S. Cl. 424—283 **8 Claims**

5. A method of treating bacterial infections in humans and animals which comprises administering to a human or animal in need thereof an antibacterially effective amount of a compound of the formula:



wherein R is
(a) alkyl of 1 to 20 carbon atoms substituted with halo, hydroxy, alkanoyloxy of 1 to 6 carbon atoms, amino, alkylamino or dialkylamino wherein each alkyl group contains 1 to 6 carbon atoms;
(b) alkenyl of 2 to 8 carbon atoms substituted with halo, carboxy, alkoxycarbonyl wherein alkoxy contains 1 to 6 carbon atoms, carbamoyl, hydroxy, alkanoyloxy of 1 to 6 carbon atoms, amino, alkylamino or dialkylamino wherein each alkyl group contains 1 to 6 carbon atoms; or
(c) alkynyl of 2 to 8 carbon atoms substituted with halo, carboxy, alkoxycarbonyl wherein alkoxy contains 1 to 6 carbon atoms, carbamoyl, hydroxy, alkanoyloxy of 1 to 6 carbon atoms, amino, alkylamino or dialkylamino wherein each alkyl group contains 1 to 6 carbon atoms,

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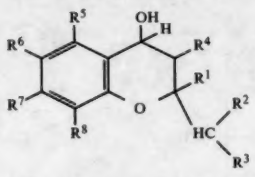
4,237,162
COMBATING ARTHROPODS WITH 2-AND 4-SUBSTITUTED-CHROMANES

Hans-Joachim Kabbe, Leverkusen; Arno Widdig, Odenthal; Wilhelm Stendel, Wuppertal, and Peter Roessler, Berg.Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 29, 1978, Ser. No. 947,286
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1977, 2745305
Int. Cl.[3] C07D *311/38*; A61K *31/35*
U.S. Cl. 424—283 **6 Claims**

1. A chromane derivative of the formula



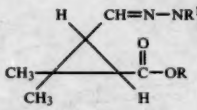
in which
R^1 to R^3, which need not be identical, each represents hydrogen, or carboxyl, or an alkyl, alkenyl, cycloalkyl, phenyl, phenylalkyl or alkoxycarbonyl radical, any of these groups being optionally substituted by halogen, cyano, C_1- C_6-alkyl, C_1-C_6-alkoxy, (C_1-C_6-alkoxy)carbonyl, (C_1-C_6-alkoxy) carbonyl (C_1-C_6-alkyl), phenyl or a carboxylic acid group,
R^4 represents phenyl, and
R^5 to R^8, which need not be identical, each represents hydrogen, halogen, hydroxyl, nitro, cyano, carboxyl, an alkyl, alkenyl, cycloalkyl, phenyl, phenylalkyl, alkoxy, phenylalkoxy, phenoxy, alkoxycarbonyl, alkylamino or dialkylamino radical, amino or acylamino, and two of the radicals, which are in the o-position to one another, can represent tetramethylene or the radical —CH=CH—CH=CH—.

4,237,163
HYDRAZONO-SUBSTITUTED CYCLOPROPANECARBOXYLATE PESTICIDES

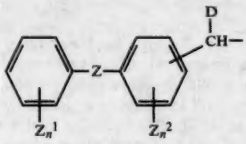
Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 11, 1979, Ser. No. 47,408
Int. Cl.³ A01N *37/34, 53/00;* **C07C** *69/743, 121/66*
U.S. Cl. 424—304 **5 Claims**

1. A cyclopropane compound of the formula



wherein R^1 and R^2 each is a methyl group and R is a group of the formula



in which D is H, —CN, —C≡CH or

R^{13} and R^{14} each independently is a hydrogen atom or an alkyl group; Z is $—CH_2—$, —O—, —CO— or —S—; Z^1 and Z^2 each independently is halogen or an alkyl group containing from 1 to 4 carbon atoms, and n is 0, 1 or 2, with the proviso that when D is —CN, —C≡CH or

then the alcohol moiety is in the R,S-racemic or in the S-optical configuration.

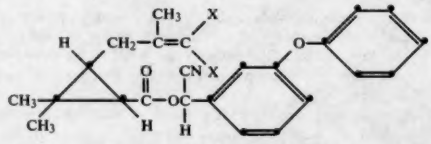
5. A method of controlling pests at a locus which comprises applying to the pests or to the locus a pesticidally effective amount of an hydrazono-substituted cyclopropane carboxylate according to claim 1.

4,237,164
CYCLOPROPANECARBOXYLATE PESTICIDES

James E. Powell, Ripon, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed May 14, 1979, Ser. No. 39,099
Int. Cl.³ A01N *37/34, 53/00;* **C07C** *69/743, 121/75*
U.S. Cl. 424—304 **5 Claims**

1. A (1R,cis) compound of the formula



wherein X is chlorine or bromine, with the priviso that the alcohol moiety is in the R,S-racemic or the S-optical configuration.

5. A method of controlling pests which comprises applying to the pests or their habitat a pest controlling effective amount of a compound according to claim 1.

4,237,165
TREATMENT OF CARBOHYDRATE METABOLISM DISORDERS

Jacques Duhault, Chatou, France, assignor to Science Union et Cie, Suresnes, France

Continuation-in-part of Ser. No. 523,273, Nov. 13, 1974, abandoned. This application Jun. 4, 1976, Ser. No. 692,653
Int. Cl.³ A61K *31/235*
U.S. Cl. 424—308 **10 Claims**

1. A method of treating a human patient in need of a reduction in levels of blood sugar, which consists in administering to said human patient an effective amount therefor of a compound selected from the group consisting of

(A) 1-(3-trifluoromethylphenyl)-2-(β-hydroxy-ethyl) amino propane;

(B) 1-(3-trifluoromethylphenyl)-2-(β-benzoyloxy-ethyl) amino propane;

(C) optical isomers thereof, and

(D) physiologically acceptable acid addition salts thereof.

6. A method for reducing blood sugar levels and improving tolerance to ingested glucose as indicated by the glucose tolerance test which consists in administering to the patient in need of same an effective amount therefor of a compound selected from the group consisting of 1-(3-trifluoromethylphenyl)-2-(β-benzoyloxy-ethyl)-aminopropane,

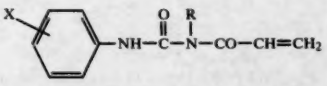
optical isomers thereof, and physiologically acceptable acid addition salts thereof.

4,237,166
1-ACRYLOYL-3-(SUBSTITUTED) PHENYL UREAS

John W. Williams, Waukegan, and Frank C. Becker, Gurnee, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

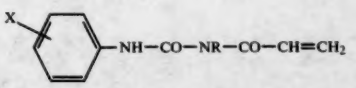
Continuation-in-part of Ser. No. 875,253, Feb. 6, 1978, abandoned. This application Jun. 14, 1979, Ser. No. 48,414
Int. Cl.³ A01N *37/10, 37/34, 47/28;* **C07C** *101/00*
U.S. Cl. 424—310 **15 Claims**

1. The process of protecting substrates against attack by common fungi consisting essentially in applying to said substrates an antifungally effective amount of a compound of the formula



wherein X is, COOalk wherein R is hydrogen or alk, and alk is a loweralkyl of 1-3 carbons.

11. A urea of the formula



wherein X is COOalk wherein R is hydrogen or alk, and alk stands for an alkyl group of 1-3 carbons.

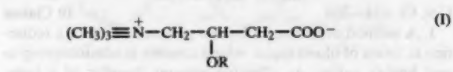
4,237,167

ACYL-CARNITINES IN A THERAPEUTICAL METHOD FOR TREATING CHRONIC URAEMIC PATIENTS UNDERGOING REGULAR DIALYSIS AND LIQUID COMPOSITION FOR USE THEREIN

Claudio Cavazza, 35, Via Marocco, 00144 Rome, Italy

Filed May 15, 1979, Ser. No. 39,233
Claims priority, application Italy, May 15, 1978, 49355 A/78
Int. Cl.[3] A61K *31/32*
U.S. Cl. 424—311 10 Claims

1. A therapeutical method for treating chronic uraemic patients under regular dialysis treatment, which comprises orally administering to said patients, both on the days of the haemodialysis sessions and on the days between one session and the next one, from 3 to 6 grams/day of an acyl-carnitine of general formula



(I)

wherein R represents acetyl, propionyl, butyryl, hydroxy butyryl, hexanoyl, octanoyl, decanoyl, palmitoyl, stearoyl, acetoacetyl, succinyl, isovaleryl and crotonyl or a pharmaceutically acceptable salt thereof.

4,237,168

N-(4-CHLORO-2-METHYLPHENYL)-N-HYDROXY METHANIMIDAMIDE AND ITS PESTICIDAL USE

Walter Reifschneider, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 11, 1979, Ser. No. 47,512
Int. Cl.[3] A01N *37/52*; C07C *131/00*
U.S. Cl. 424—326 3 Claims

1. N-(4-chloro-2-methylphenyl)-N'-hydroxy methanimidamide.

4,237,169

INHIBITION OF PROLACTIN RELEASE BY AN AMINOBENZYLCYCLOALKANOL

Eric L. Lien, Paoli, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,257
Int. Cl.[3] A61K *31/135*
U.S. Cl. 424—330 1 Claim

1. A method for lowering blood serum prolactin levels in warm-blooded animals which comprises administering to a warm-blooded animal in need of a lowered serum prolactin level an amount of 1-cis-2-(α-dimethylamino-m-hydroxybenzyl)-cyclohexanol, or a pharmacologically acceptable acid addition salt thereof, effective to bring about said lowering of the serum prolactin level.

4,237,170

HIGH FIBER WHITE BREAD

Morton Satin, Dollard des Ormeaux, Canada, assignor to Multimarques Inc., Montreal, Canada

Continuation-in-part of Ser. No. 920,387, Jun. 29, 1978, abandoned, which is a continuation-in-part of Ser. No. 755,021, Dec. 28, 1976, abandoned. This application Dec. 3, 1979, Ser. No. 99,982
Int. Cl.[3] A21D *2/36*
U.S. Cl. 426—21 12 Claims

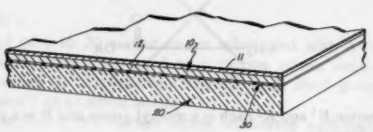
1. A composition for use in making a high fiber content white bread comprising 100 parts by weight flour and about 5 to 20 parts by weight field pea hull fibers having particle sizes in the range which pass a 20 mesh screen but do not pass an 80 mesh screen, said pea hulls being selected from the group consisting of yellow and green pea hulls and mixtures thereof.

4,237,171

INSULATED AND MOISTURE ABSORBENT FOOD CONTAINER AND METHOD OF MANUFACTURE

Fred C. Laage, 7149 Wildermere Dr., Rockford, Mich. 49341, and Patrick A. Loftus, Grand Rapids, Mich., assignors to Fred C. Laage, Rockford, Mich.

Filed Feb. 21, 1979, Ser. No. 13,123
Int. Cl.[3] B65D *81/26*
U.S. Cl. 426—127 20 Claims



1. A method for packaging a hot food having a first portion thereof of a constituency which gives off condensing moisture while in heated condition and an other portion of a constituency that is capable of absorbing said moisture with a negative affect on texture and appeal of said hot food comprising:

providing a covered container having an inner food containing layer of absorbent paperboard adhered to an outer layer of resinous foam insulating material enclosing said inner layer, wherein the inner paperboard layer has an absorbent porous surface and has sufficient thickness and rigidity to lend body and strength to the container, and wherein said outer foam layer is suffciently thick to insulate and prevent moisture leakage from said container; and

placing said hot food in said covered container on said inner layer so that said absorbent paperboard absorbs a substantial amount of said moisture given off by said first portion thereby substantially lessening the moisture absorbed by said other portion to prevent the said other portion from becoming soggy,

said resinous foam material preventing said moisture absorbed by said paperboard from leaking through said container while at the same time retaining heat in said container.

14. In a hot food package comprising a covered container containing hot food having a first portion thereof of a constituency which while in heated condition gives off condensing moisture and an other portion of a constituency that is capable of absorbing said moisture with a negative affect on texture and appeal of said hot food; the improvement comprising said covered container being constructed of an inner food contacting layer of absorbent paperboard adhered to a outer layer of resinous foam insulating material enclosing said inner layer, wherein said paperboard layer has an absorbent porous exposed inner surface and has sufficient thickness and rigidity to lend body and strength to the container, yet is sufficiently thin that it can be bent from flat sheet into the shape of a container, and wherein said outer foam layer is sufficiently thick to insulate and prevent moisture leakage, yet is sufficiently thin that it will bend without excessive fracturing when said paperboard is bent;

said absorbent paperboard absorbing a substantial amount of said moisture given off by said first portion of said food thereby substantially lessening the moisture absorbed by said other portion to prevent the said other portion from becoming soggy,

said resinous foam material preventing said moisture absorbed by said paperboard from leaking through said container while at the same time retaining heat in said container.

4,237,172

SEALING LEAKS BY POLYMERIZATION OF VOLATILIZED AMINOSILANE MONOMERS

Joseph J. Packo, 2504 Pebble Beach Dr., Austin, Tex. 78747, and Donald L. Bailey, Traverse City, Mich., assignors to Joseph J. Packo, Austin, Tex.

Filed Dec. 4, 1978, Ser. No. 966,327
Int. Cl.³ B32B *35/00*
U.S. Cl. 428—63 **14 Claims**

1. A method of forming a seal at the situs of a leak located in a vessel by polymerizing an organic monomer at said situs, comprising introducing a sealant consisting essentially of an aminosilane monomer into the interior of said vessel, said aminosilane monomer being readily volatilizable at the ambient temperature of said vessel and having the formula:

wherein R is H, halogen or R′, and R′ is alkyl of 1–4 carbons;
R_1 is halogen, R′, —OR, —NHR′ or —$N(R')_2$;
R_2 is halogen, R′, —OR, —NHR′ or —$N(R')_2$; and
R_3 is —NHR′ or —$N(R')_2$;
said aminosilane monomer being introduced to said vessel under sufficient pressure and for a sufficient period of time to effect contact of said leak situs with said monomer in the vapor state and to effect polymerization of said monomer at said leak situs and sealing of the leak.

13. A sealed vessel obtained by the method of claim 1.

4,237,173

WHITE SIDEWALL TIRE

Tiong H. Kuan, Stow, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Apr. 26, 1979, Ser. No. 33,342
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—65 **1 Claim**

1. A pneumatic tire characterized in the sidewall is coated with:
(a) a catalyzed reaction product of 100 parts of:
(1) a prepolymer of a hydrogenated diphenylmethane diisocyanate-terminated polytetrahydrofuran containing from 2 to 6% by weight of isocyanate groups;
(2) a chain extending diol having a 2 to 6 carbon atom chain; and
(3) a chain extending and crosslinking triol having a molecular weight of from 130 to 11,000;
wherein the ratio of NCO groups of (1) to the total OH groups of (2) and (3) has a value of from 100:80 to 100:97;
(b) reinforced by the addition of from 4 to 10 parts of a titanium dioxide pigment.

4,237,174

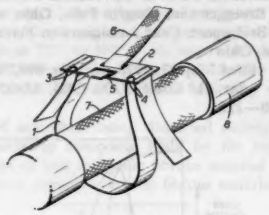
WRAP-AROUND DEVICES

Bruno J. F. Lagardere, 12 ter, rue Raymond Houdoux, 95540 Mery sur Oise, France, and Richard C. Sovish, rue du Coteau, 10 1420 Braine l'Alleud, Belgium

Filed Dec. 20, 1978, Ser. No. 971,260
Claims priority, application United Kingdom, Dec. 23, 1977, 53703/77
Int. Cl.² F16L *25/02*; H01B *7/00*; B29C *27/02*
U.S. Cl. 428—99 **27 Claims**

1. A wrap-around device which comprises heat recoverable sheet material and mechanical retaining means adapted to cooperate and engage opposed edge regions of the sheet material so that the surface of the device after recovery about a substrate lies substantially flush with the substrate without protuberances from its outer surface, the mechanical retaining means being provided with means for receiving and engaging an electrical component to electrically connect the component to the substrate.

25. A method of forming a wrap-around connection to a substrate comprising wrapping a length of heat recoverable sheet material about the substrate, engaging opposed edge



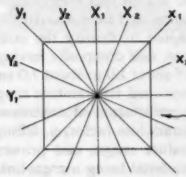
regions of said sheet material with mechanical retaining means, said mechanical retaining means being provided with receiving means for an electrical component, positioning an electrical component in said receiving means, and heating said sheet material to cause recovery and electrically connect said electrical component to said substrate.

4,237,175

CARBON-FILAMENT REINFORCED GEAR

Tuguo Kobayashi, 24-8, Horifune 3-chome, Kita-ku, Tokyo, Japan

Filed Jun. 9, 1978, Ser. No. 914,125
Claims priority, application Japan, Jun. 10, 1977, 52-67778
Int. Cl.³ B32B *5/12*
U.S. Cl. 428—192 **9 Claims**



1. A method for preparing a carbon filament reinforced gear material of laminated structure having layers of carbon filaments, comprising the steps of:
loosening the woven fabrics, each of which including warps and wefts being composed of multicarbon filaments bundled into strands by means of a first binding agent;
brushing said woven fabrics in the lengthwise and cross-wise or oblique direction while applying thereto a second binding agent so that the filaments in each of the strands may be substantially equidistantly separated from one another to make thinner and finer fabrics, said warps and wefts of said woven fabrics being angularly spaced by approximately 90 degrees;
laminating a first said woven fabric with a second said woven fabric wherein said second woven fabric being angularly shifted by approximately 45 degrees relative to said first woven fabric;
laminating a third said woven fabric with said first and second said woven fabrics wherein said third woven fabric being angularly shifted by approximately 22.5 degrees relative to said first woven fabric;
laminating at least a fourth said woven fabric with said first, second and third said woven fabrics wherein said fourth woven fabric being angularly shifted by approximately 67.5 degrees relative to said first woven fabric;
repeating the laminating steps until the desired thickness of the gear material is obtained; and

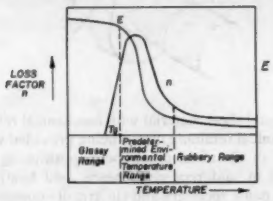
applying heat and pressure to the laminated fabrics so as to set the binding agents thereby to prepare the laminated gear material.

4,237,176

MOLDABLE SOUND CONTROL COMPOSITE

Walter H. Brueggemann, Chagrin Falls, Ohio, and Charles L. Meteer, Bridgeport, Conn., assignors to Ferro Corporation, Cleveland, Ohio

Filed May 27, 1976, Ser. No. 690,796
Int. Cl.[2] C04B *43/00*; C08L *67/00*
U.S. Cl. 428—212 **2 Claims**



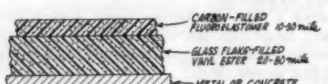
1. A moldable sound control composite adapted to form a molded structural article by itself, free of any accompanying support, and combining damping, barrier performance, and structural strength, said composite being further adapted for use within a predetermined environmental temperature range, said composite comprising in weight percent a blend of from about 10% to about 60% of a primary organic polymeric resinous material that is non-viscoelastic within said temperature range to impart structural strength, from about 40% to about 90% of a secondary organic resinous polymeric material that is viscoelastic within said temperature range to provide damping performance, and from about 10% to about 60% of a filler material adapted to density the composite and impart barrier performance, said composite having a specific gravity within the range of about 1.0 to about 7.0 and, by virtue of said blend, a glass transitional temperature range generally corresponding to said predetermined environmental temperature range and a maximum loss factor, n, falling within said environmental temperature range, said primary non-viscoelastic organic resinous material being a cross-linked polyester resin, and said secondary viscoelastic organic resinous material being selected from the group consisting of linear polyester resins, polyethylene, polystyrene, and elastomers.

4,237,177

CORROSION-RESISTANT COATED ARTICLES

William R. Slama, North Olmsted; Robert B. Washburn, and Dale J. Semanisin, both of Cleveland, all of Ohio, assignors to General Signal Corporation, Stamford, Conn.

Filed Nov. 3, 1978, Ser. No. 957,084
Int. Cl.[3] B05D *7/00*, *1/02*
U.S. Cl. 428—215 **11 Claims**



1. A coated article resistant to corrosion and/or deterioration which comprises:

a substrate;

a primer coating layer in contact with the surface of said substrate, said primer coating layer being a polymer formed from a thermosetting polymeric material;

one or more inner coating layers, the first of said inner coating layers being in bonded contact with said primer coating layer and each succeeding inner coating layer being in bonded contact with the preceding inner coating layer, each of said inner coating layers being an admixture of a polymer formed from a thermosetting polymeric material and a reinforcing filler material, and each of said inner coating layers having a thickness from about 20 to about 80 mils; and

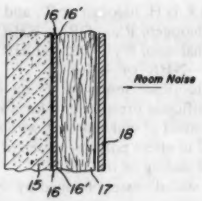
an outer coating layer in chemically bonded contact with the outermost of said inner coating layers, said outer coating layer being an admixture of a fluroelastomer and a reinforcing filler material.

4,237,178

SOUND PROOF MATERIALS FOR BUILDINGS

Tadashige Mazaki, Tokyo, Japan, assignor to Hideo Sakai, Tokyo, Japan

Filed May 29, 1979, Ser. No. 43,016
Claims priority, application Japan, Jun. 16, 1978, 53-72047
Int. Cl.[3] B32B *5/16*
U.S. Cl. 428—242 **4 Claims**



1. A sound proof material for buildings comprising a glass cloth and a lead coating formed on at least one side of said glass cloth, said material being prepared as a flexible noise separating member by mixing powdery lead of finer particle size with an impregnating resin, a solvent, a plasticizer and the like and applying them on said glass cloth, and wherein a glasswool or rockwool layer is further adhered to an outer surface of said lead coating as a noise absorption member.

4. A sound proof material for buildings comprising a glass cloth and a lead coating formed on at least one side of said glass cloth, said material being prepared as a flexible noise separating member by mixing powdery lead of finer particle size with an impregnating resin, a solvent, a plasticizer and the like and applying them on said glass cloth, and wherein said material is prepared by providing an impregnating resin consisting of about 50 volume % of vinyl chloride resin, about 40 volume % of vinyl acetate resin and about 10 volume % of butadiene-styrene rubber, adding about 6 kg of toluene as a solvent, about 3 kg of aluminum hydroxide as an additive, about 2 kg of phosphoric acid ester as a plasticizer and about 13 kg of powdery lead having a particle size of about 100–350 mesh based on 4 kg of said impregnating resin, and applying them on at least one side of a glass cloth made from glass yarns with a filament diameter of 0.16 mm and having a warp density of 32/25 mm and a weft density of 22/25 mm.

4,237,179

PROCESS FOR FIREPROOFING CELLULOSE-CONTAINING FIBER MATERIAL DYED WITH COPPER-COMPLEX AZO DYES

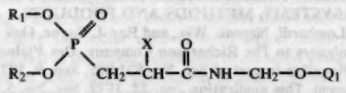
Detlef Mentzel, Wehr, Fed. Rep. of Germany, and Hans-Rudolf Frei, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 15, 1977, Ser. No. 824,478
Claims priority, application Switzerland, Aug. 27, 1976, 10885/76
Int. Cl.[2] D06P *1/10*, *5/06*, *5/08*; C09D *5/18*
U.S. Cl. 428—276 **13 Claims**

1. Process for fireproofing cellulose containing textile fiber

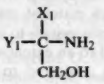
material dyed with copper-complex azo dyes or with azo dyes treatable with copper or after-coppered, which process comprises applying to the fiber material an aqueous preparation comprising

(a) 250 to 450 g of a phosphorus compound of the formula



wherein Q_1 is hydrogen, alkyl or alkenyl having at most 4 carbon atoms, R_1 and R_2 are each alkyl, halogenoalkyl or alkenyl each having at most 4 carbon atoms, and X is hydrogen or methyl,

(b) 10 to 20 g of an alkanolamine of the formula



wherein X_1 is alkyl, hydroxyalkyl or halogenoalkyl each having 1 to 4 carbon atoms, or hydrogen, and Y_1 is alkyl, hydroxyalkyl or halogenoalkyl each having 1 to 4 carbon atoms, phenyl, benzyl, or cyclohexyl, with the alkanolamine being in the form of a watersoluble acid addition salt of inorganic acids, or aliphatic mono- or dicarboxylic acids having at most 4 carbon atoms, or of an alkanecarboxylic acid having 1 to 3 carbon atoms, and

(c) 1 to 6 g of a water-soluble copper salt of an inorganic acid or of an alkanecarboxylic acid having 1 to 3 carbon atoms, and

(d) 0 to 60 g of an aminoplast pre-condensate or an etherified aminoplast pre-condensate;

and thereupon drying the fiber material and subjecting it to a heat treatment at a temperature from 140° to 200° C.

11. Dyed fiber material bearing thereon a fireproof finish obtained by the process according to claim 1.

4,237,180

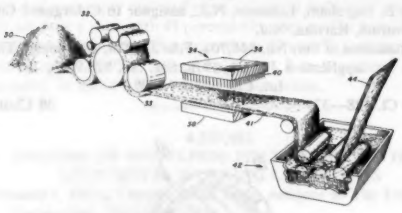
INSULATION MATERIAL AND PROCESS FOR MAKING THE SAME

Michael C. Jaskowski, 226 Mt. Lebanon Blvd., Mt. Lebanon, Pa. 15234

Continuation of Ser. No. 647,580, Jan. 8, 1976, abandoned. This application Aug. 11, 1977, Ser. No. 823,754

Int. Cl.³ D04H *1/08, 1/14*

U.S. Cl. 428—280 **9 Claims**



1. An insulating material comprising,

a layer of an intimate admixture of inorganic fibrous material and heat sensitive, organic synthetic fibrous material,

said organic fibrous material including fibers having a length of less than ½ inch,

said heat sensitive organic fibrous material being sprayed by air-flocculation into mixture with said inorganic fibrous material so that said organic fibrous material is intimately dispersed within said entire layer of said intimate admixture,

said organic fibrous material being arranged in said entire layer of material in a concentration by volume with said inorganic fibrous material in the range between about 2 to 10%,

said heat sensitive, organic synthetic fibrous material being randomly arranged throughout said admixture such that when heated to an elevated temperature in the range between about 212° to 300° F. shrinks to at least 40% in length and thereby mechanically interlocks said inorganic fibrous material to form a bonded insulating composite body, and

a plurality of interstices being dispersed throughout said bonded insulating composite body by the interlocking arrangement of said inorganic fibrous material with said heat sensitive, organic synthetic fibrous material.

4,237,181

METHOD OF MANUFACTURING A FLEXIBLE POLYURETHANE FOAM PRODUCT

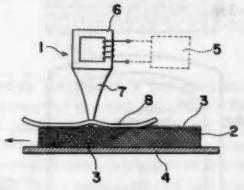
Nato Tanabe, Takatsuki; Kenzoh Okada, and Norio Maeda, both of Neyagawa, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Okayama, Japan

Filed Jun. 30, 1978, Ser. No. 921,171

Claims priority, application Japan, Jul. 4, 1977, 52-80282

Int. Cl.³ B32B *5/18, 3/26, 31/16*

U.S. Cl. 428—307 **6 Claims**



6. An article of manufacture manufactured by applying a mass of thermally fusible particles of a bonding agent in a predetermined pattern on one surface of a sheet of flexible polyurethane foam having an open-celled structure; causing the bonding particles to permeate into the open-celled structure of the polyurethane foam sheet by the application of high frequency vibrations to the bonding particles so as to be uniformly distributed in said open-celled structure; wherein said applied vibrations have a frequency and an amplitude within the range of 1,000 to 50,000 Hz and 5 to 100 μm, respectively; applying heat to cause the permeated bonding particles to be fixed in said open-celled structure of the polyurethane foam sheet; and fusion-bonding surface covering sheets onto the opposed surfaces of the polyurethane foam sheet with the bonding particles contained therein.

4,237,182

METHOD OF SEALING INTERIOR MINE SURFACE WITH A FIRE RETARDANT HYDROPHILIC POLYURETHANE FOAM AND RESULTING PRODUCT

Glenn E. Fulmer, Clarksville, and Robert M. Murch, Brinklow, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Nov. 2, 1978, Ser. No. 956,812

Int. Cl.³ B32B *3/26, 5/18*

U.S. Cl. 428—310 **22 Claims**

11. A fire-retarding coated mine interior comprising a mine interior surface having deposited thereon a fire-retarding polyurethane foam mine sealant prepared by

a. mixing a foam-forming mine sealant composition comprising

(1) hydrophilic polyoxyalkylene urethane prepolymer,

(2) water in an amount of at least 20 moles of water for every mole of NCO groups in the prepolymer, and
(3) at least a three-part fire-retarding additive mixture comprising
(i) a phosphorous fire-retardant compound,
(ii) alumina trihydrate carried in the water phase, and
(iii) a water-dispersible and combustible organic carbon compound having from 0.1 to 1.0 hydroxyl group for every carbon atom present in said carbon compound, said carbon compound being carried in the water phase and being present from about 5 to about 30 parts by weight based on 100 parts by weight of the prepolymer, provided that when said carbon compound is wood cellulose it is present from about 2 to about 10 parts by weight of the prepolymer, and said carbon compound not functioning as a gelatinizing agent at the concentration employed, and

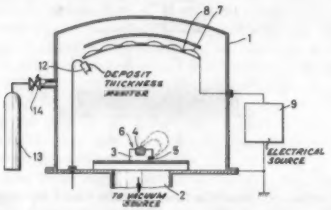
b. spraying the mixture onto the mine interior surface.

4,237,183

PROCESS FOR THE SURFACE TREATMENT OF A SYNTHETIC RESIN LENS AND THE PRODUCT THEREOF

Junichi Fujiwara, Yachimata, and Kazuo Nakamura, Tokyo, both of Japan, assignors to Nihon Shinku Gijutsu Kabushiki Kaisha, Chigasaki, Japan

Continuation of Ser. No. 714,262, Aug. 13, 1976, abandoned. This application Apr. 7, 1978, Ser. No. 894,249
Claims priority, application Japan, Aug. 25, 1975, 50-102088
Int. Cl.[2] B05D *5/06*
U.S. Cl. 428—336 **6 Claims**



1. A process for the surface treatment of a synthetic resin lens comprising applying to the surface of a lens body made of synthetic resin a coating film of glass by a high-vacuum electric-field vapor deposition treatment including the steps of mounting the resin lens body in a treating chamber, introducing an evaporation source in the chamber, evacuating the chamber to a comparatively high vacuum of about from 1×10^{-4} to 2×10^{-5} torr and generating between the lens body and the evaporation source an electric field of about 50 to 100 volts/cm, the evaporation source being formed as a crucible containing the glass with an electron gun for irradiation thereof.

4,237,184

STRATIFIED PROTECTING COATING FOR WEARING PIECES AND HARD METAL CUTTING TOOLS

Denis R. Gonseth, Founex, and Charles Hauser, Genolier, both of Switzerland, assignors to Stellram S.A., Nyon, Switzerland

Filed Jun. 15, 1979, Ser. No. 48,888
Claims priority, application Switzerland, Jun. 22, 1978, 787/78
Int. Cl.[2] B32B *7/02, 15/18*
U.S. Cl. 428—336 **13 Claims**

1. A hard metal wearing piece, especially for tools, which is covered at least on the places subjected to wear with a stratified protecting coating comprising at least five superimposed layers, at least two of them having different compositions, the layer which is in contact with the surface of the piece consisting in a carbide layer, the external layer consisting in a boride or a carbide layer, and the intermediary layers being layers of carbide, nitride, oxide, boride or of mixed compounds thereof.

4,237,185

RADIATION CURABLE TRANSPARENTIZING RESIN SYSTEMS, METHODS AND PRODUCTS

Louis J. Lombardi, Neenah, Wis., and Roy J. Coyne, Oak Lawn, Ill., assignors to The Richardson Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 831,805, Sep. 9, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,168
Int. Cl.[2] G03C *1/68*; C08F *2/50*; B32B *29/06*
U.S. Cl. 428—337 **23 Claims**

1. A transparentized cellulosic product comprising: a cellulosic stock material having a preselected initial strength and stiffness, said cellulosic stock material having been transparentized in the absence of a solvent by radiation curing of a solventless, radiation-curable resin system while that resin system is within said cellulosic stock material, said stock material having been treated with said resin system to include the resin system within the stock material to an extent sufficient that the stock is transparentized when subjected to actinic radiation, said sufficient extent being limited in order to form a transparentized cellulosic product having a strength and stiffness substantially the same as said initial strength and stiffness, said solventless, radiation-curable resin system including an acrylate monomer, a photosensitizer and an acrylate oligomer, said acrylate oligomer being a diacrylate oligomer derivative of an aliphatic/bisphenol-A diepoxide blend.

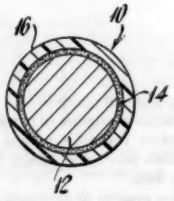
17. A method for producing transparentized cellulosic material having approximately the same strength and stiffness of the original untransparentized cellulosic stock material comprising: selecting a cellulosic stock material; treating the stock in the absence of a solvent by including therewithin a solventless, radiation-curable resin system to an extent sufficient that the stock is transparentized when subjected to actinic radiation, said sufficient extent being limited in order to form a transparentized cellulosic product without significantly reducing said original strength and stiffness, said solventless, radiation-curable resin system is formulated by mixing together an acrylate monomer, a photosensitizer, and an acrylate oligomer, said acrylate oligomer being a diacrylate oligomer derivative of an aliphatic/bisphenol-A diepoxide blend; and curing the resin-treated cellulosic stock material for transparentizing the same to a generally transparent product having a strength and stiffness approximately the same as said strength and stiffness of the untransparentized cellulosic stock material.

4,237,186

THERMOPLASTIC RESIN-COATED METALLIC SUBSTRATE AND THE METHOD OF PRODUCING THE SAME

Glen E. Ingraham, Lebanon, N.J., assignor to Colorguard Corporation, Raritan, N.J.

Continuation of Ser. No. 546,701, Feb. 3, 1975, abandoned. This application Jul. 28, 1978, Ser. No. 928,911
Int. Cl.[2] B32B *15/00*
U.S. Cl. 428—379 **38 Claims**



1. A protectively coated wire comprising a metallic wire

substrate and bonded to said substrate a polyamide resin hot melt adhesive, said polyamide hot melt adhesive comprising the condensation product of alkylene diamines of the formula:

$$H_2N(CH_2)_xNH_2,$$

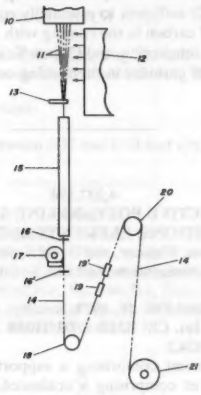
wherein x is an integer of from 2 to 20; and polymeric fat acids having a dimeric fat acid content greater than about 90 percent by weight; the molar equivalent of amine employed being about equal to the moiar equivalent of carboxyl groups present in said fat acid; said condensation product having a softening point of 112° C. to 138° C. and a tensile strength of from 400 pounds per square foot to 600 pounds per square foot; and a second p!y in a thickness of at least 0.015 inch of an extrudable thermoplastic resin adhering to said substrate by means of said adhesive.

4,237,187

HIGHLY ORIENTED, PARTIALLY DRAWN, UNTWISTED, COMPACT POLY(ε-CAPROAMIDE) YARN

James C. Raybon, Jr.; Malcolm O. Darby, and Thomas V. Derrick, Jr., all of Columbia, S.C., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Feb. 26, 1979, Ser. No. 15,515
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—399 **1 Claim**



1. A highly oriented-as-spun, partially drawn, untwisted, compact, interlaced multifilament poly(ε-caproamide) yarn characterized by a denier as high as 400, approximately 8 to 28 entanglements per meter of yarn, a residual draw ratio required to produce a yarn with 45 percent elongation of at most 1.3, an elongation at break of between about 45 and 70 percent, a boil shrinkage at 100° C. of approximately 7 to 8 percent, and a tenacity of about 3.8 to 4.6 grams per denier.

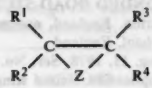
4,237,188

EPOXIDE OR EPISULFIDE POLYMER-BASED HOT MELT METAL WORKING LUBRICANTS

Donald I. Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Feb. 26, 1979, Ser. No. 15,398
Int. Cl.³ B32B *15/18, 27/38;* C10M *3/32*
U.S. Cl. 428—418 **7 Claims**

1. A metal workpiece having on the surface thereof a film of a composition which provides lubricity thereto and which comprises at least one polymer of at least one monoepoxide or monoepisulfide, said monoepoxide or monoepisulfide having the formula



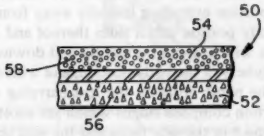
wherein R^1 is a substantially aliphatic hydrocarbon-based radical, each of R^2, R^3 and R^4 is individually hydrogen or a substantially aliphatic hydrocarbon-based radical, Z is oxygen or sulfur, and the total number of aliphatic carbon atoms in R^1, R^2, R^3 and R^4 is from about 6 to about 23; said composition melting within the range of about 30° to about 150° C.

4,237,189

POLYMODAL MAGNETIC RECORDING MEDIA PROCESS FOR MAKING AND VERIFYING THE SAME AND COMPOSITIONS USEFUL THEREIN

Robert J. Deffeyes, 804 Red Oak La., Arlington, Tex. 76012, assignor to Robert J. Deffeyes, Arlington, Tex.

Filed Oct. 31, 1973, Ser. No. 411,253
Int. Cl.² H01F *10/02*
U.S. Cl. 428—457 **15 Claims**



1. In an article comprising a ferromagnetic composition adapted to be processed in a magnetic field to receive a pattern which pattern can be sensed by a magnetic reading head, the improvement wherein said ferromagnetic composition comprises at least two different populations of ferromagnetic material intermixed within a matrix, each of said populations forming means to store, independently from one another, magnetically-recorded information and wherein a first said population is so selected that it can be magnetically switched at a magnetic field intensity at which a second said population of said composition is not affected and wherein a non integrated dM/dt curve of the magnetic populations will exhibit a valley between two adjacent peaks equal to at least one-half the average distance from the base line to top of said peaks.

4,237,190

PROPYLENE/POLYSTYRENE COMPOSITION AND SUBSTRATES COATED WITH SUCH COMPOSITIONS

Theodore L. McGee, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

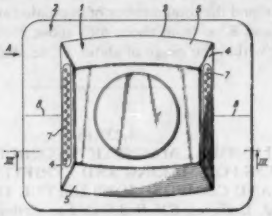
Division of Ser. No. 836,835, Sep. 26, 1977, Pat. No. 4,183,845. This application Jun. 22, 1979, Ser. No. 51,068
Int. Cl.³ B32B *23/08*
U.S. Cl. 428—513 **7 Claims**

1. A substrate coated with a film of an extruded coating composition comprising a polymer blend of polystyrene and a polypropylene having a melt flow rate, as determined by ASTM-1238-G, within the range of about 30 to about 40 grams per ten minutes, the ratio of polypropylene to polystyrene in the blend being within the range of about 5:1 to 2:1 , said coated substrate being obtained by extruding said polymer blend at a melt temperature of about 475° F. to about 575° F. onto said substrate and contacting said coated substrate with a chill roll maintained at a temperature of about 120° F. to 200° F. to effect adhesion and solidification of said extrudate on said substrate.

4,237,191
BONDED ROAD STUDS

John M. Horne, Yatton, England, assignor to Berger Traffic Markings Ltd., Bristol, England

Filed Aug. 11, 1978, Ser. No. 933,037
Claims priority, application United Kingdom, Aug. 23, 1977, 35338/77
Int. Cl.[2] G08G 1/00
U.S. Cl. 428—542 8 Claims



1. A non-depressible bonded road stud which comprises an upstanding body portion including two opposite substantially upright side faces which are fitted with reflecting lenses, a basal plinth portion extending laterally away from the periphery of the body portion on all sides thereof and including an upper surface which slopes outwardly and downwardly away from the periphery of the body portion; and wherein the upper surfaces of the plinth adjacent the lens-carrying side faces of the body portion comprise ridges which are substantially centred with respect to the side faces and the said upper surfaces are cambered to slope away from both sides of the ridges.

4,237,192
ZINC PLATED STEEL PLATE AND CAN PRODUCED FROM THE SAME

Takehiko Ito; Yusuke Hirose, and Hideaki Ishida, all of Ichikawa, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

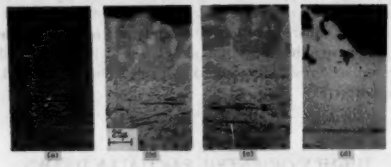
Filed Jan. 30, 1979, Ser. No. 7,827
Int. Cl.[3] B32B 15/08
U.S. Cl. 428—659 4 Claims

1. A zinc-plated steel plate having improved solderability prepared by plating a steel plate with zinc from a zinc bath containing at least 0.1% by wt of aluminum, removing the oxides from the surface of the thus-plated steel plate such that the surface, up to a depth of 200 Angstroms, is substantially free from oxides to such a degree that the ratio of the aluminum ion detection intensity ($I_{Al}+$)/zinc ion detection intensity ($I_{Zn}+$) is not higher than 20 at the maximum as measured by a microanalyzer, and coating the thus-treated surface with an anti-rust film selected from the group consisting of an acryl type resin, petroleum type wax and an alkyd type resin to such an extent that the film has a thickness of 1.0–20 microns.

4,237,193
OXIDATION CORROSION RESISTANT SUPERALLOYS AND COATINGS

Melvin R. Jackson, and John R. Rairden, III, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 738,649, Nov. 4, 1976, Pat. No. 4,117,179.
This application Jun. 16, 1978, Ser. No. 916,222
Int. Cl.[2] B32B 15/20
U.S. Cl. 428—678 6 Claims



1. An article of manufacture having improved high temperature oxidation and corrosion resistance comprising: (a) a superalloy substrate containing a carbide reinforcing phase, and (b) a coating consisting of chromium, aluminum, carbon and at least one element selected from iron, cobalt or nickel, subject to the proviso that the coatings contain an amount of carbon (1) sufficient to saturate any solid state phases of the coating composition, (2) sufficient to essentially equilibrate the chemical potential of carbon in the coating with that in the substrate with minimum interaction, and (3) insufficient to form substantial quantities of carbides in the coating composition.

4,237,194
CONDUCTIVE POLYANALINE SALT-LATEX COMPOSITIONS, ELEMENTS AND PROCESSES

Donald A. Upson, Webster, and David J. Steklenski, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 16, 1979, Ser. No. 12,690
Int. Cl.[3] B32B 3/00; H01B 1/00
U.S. Cl. 428—424.2 8 Claims

1. In an element comprising a support having thereon a conductive layer comprising a coalesced, cationically stabilized latex and a semiconductor, the improvement wherein said latex and said semiconductor are chosen so that said semiconductor is associated with said latex before coalescing and said semiconductor is a polyaniline acid addition salt.

5. An element according to claim 1 wherein the polyaniline of said polyaniline salt is selected from the group consisting of:
N-{p-[4-(p-methoxyanilino)anilino]phenyl}-1,4-benzoquinone imine and
N-{p-[p-(anilino)anilino]phenyl}-1,4-benzoquinone diimine.

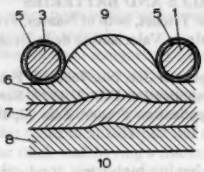
4,237,195
POROUS ELECTRODE

Marinus Alfenaar, Schinnen, Netherlands, assignor to Electrochemische Energieconversie N.V., Mol, Belgium

Filed Jun. 20, 1978, Ser. No. 917,361
Claims priority, application Netherlands, Jun. 24, 1977, 7706998
Int. Cl.[3] H01M 4/64, 4/86
U.S. Cl. 429—44 18 Claims

1. A porous electrode comprising a porous layer containing

carbon and a non-polar resin and an electrically conductive fluid-permeable screen or grid acting as a collector, wherein



the entire surface of the collector material is covered with an electrically conductive collector-covering resin layer.

4,237,196

SODIUM ION-CONDUCTING GLASS ELECTROLYTE FOR SODIUM-SULFUR BATTERIES

Gunter Gütmann, Esslingen; Holger Kistrup, Stuttgart; Friedrich G. K. Baucke, Mainz, and Gerd Müller, Ergolding, all of Fed. Rep. of Germany, assignors to Deutsche Automobilgesellschaft mbH, Hanover and Jenaer Glaswerk Schott & Gen., Mainz, both of, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,952

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811688

Int. Cl.³ H01M *10/39*

U.S. Cl. 429—50 **7 Claims**

1. A battery electrolyte formed by sodium ion conducting glass for use in sodium-sulfur batteries, having the composition

$$xNa_2O.ySiO_2.zAl_2O_3$$

in which x/y lies between 0.52 and 0.92 and x/z lies between 2 and 20.

4,237,197

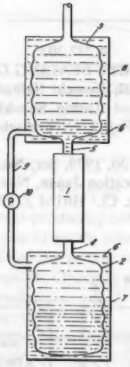
ELECTROCHEMICAL SYSTEM

Thomas G. Hart, Royal Oak, Mich., assignor to Energy Development Associates, Inc., Madison Heights, Mich.

Continuation-in-part of Ser. No. 744,712, Nov. 24, 1976, Pat. No. 4,096,393. This application Apr. 3, 1978, Ser. No. 892,691

Int. Cl.³ H01M *2/38*

U.S. Cl. 429—81 **10 Claims**



1. A zinc halogen electrochemical system comprising a housing containing at least two electrodes, two electrolyte reservoirs, a first reservoir having flexible walls, conduit means connecting said housing and said reservoir, means to vary the pressure on the outside of said flexible walls of said first electrolyte reservoir relative to the pressure on the outside of flexible walls of the second electrolyte reservoir, and means to circulate electrolyte through the electrode area and between said housing and said first reservoir.

4,237,198

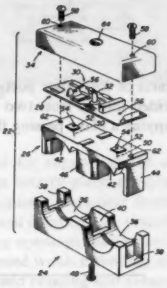
ELECTRICAL DEVICE WITH BI-LEVEL BATTERY STATE-OF-CHARGE INDICATOR

Richard L. Eby, Marshfield, and Lester E. Wilson, Bedford, both of Mass., assignors to Anderson Power Products, Inc., Boston, Mass.

Filed Sep. 6, 1979, Ser. No. 72,879

Int. Cl.³ H01M *10/48*

U.S. Cl. 429—93 **4 Claims**



1. A battery cable clamp comprising:

(1) first and second mating yoke means each having a pair of cable receiving saddles that define two generally circular cable openings when the first and second yoke means are mated together.

(2) means for releaseably holding said first and second in mated relation;

(3) first and second electrically conductive cable insulation piercing means mounted on said first yoke means so that electrical contact is made with both cables when the cables are positioned in the cable receiving saddles in the first and second yoke means and the two yoke means are mated together;

(4) means mounted on said first yoke means for providing a first indication when a voltage applied to said first and second cable insulation piercing means reaches a preselected, first voltage level;

(5) means for maintaining said first indication until the applied voltage reaches a preselected, second and lower voltage level;

(6) means for providing a second indication when the applied voltage reaches said preselected, second and lower voltage level; and,

(7) means for continuing the second indication until the applied voltage again reaches said preselected, first voltage level.

4,237,199

CYLINDRICAL ELECTRIC CELL

Guy Gelin, Neuville de Poitou, France, assignor to Saft Leclanche, Romainville, France

Filed Dec. 31, 1979, Ser. No. 108,756

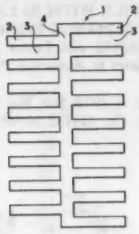
Claims priority, application France, Jan. 12, 1979, 79 00725

Int. Cl.³ H01M *6/10*

U.S. Cl. 429—94 **2 Claims**

1. A cylindrical electric cell whose positive electrode is in contact with the cylindrical outer wall of the cell and separated from the negative electrode by a porous separator and whose negative electrode is constituted by a sheet of metal wound round an elastically deformable current collector in the form of a cylinder whose directrix is a substantially circular

curve with two distinct ends, wherein at least one of those two portions of said current collector cylinder which are close to said ends are cut into matching shapes so that they fit into each other, the protruding parts of one portion being accomodated



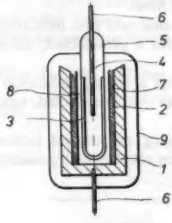
in the recessed parts of the other portion, and wherein said metal sheet is divided into at least two parts separated by at least one cut occupying a plane passing through the axis of the cell.

4,237,200

ELECTROCHEMICAL STORAGE CELL

Gert Weddigen, Heidelberg, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie AG, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,276
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754454
Int. Cl.[3] H01M *10/39*
U.S. Cl. 429—102 9 Claims



1. Electrochemical storage cell with at least one anode chamber containing alkali metal as the anolyte and at least one cathode chamber containing as catholyte at least one chalcogen in dissolved or melted form, as well as carbon- or graphite felt, with the anode chamber and the cathode chamber separated from each other by an alkali-ion-conducting solid electrolyte, the improvement which comprises incorporating in the felt a layer of porous felt in which the fibers of the layer of felt has exposed on its surface in island-fashion, an alkali-ion-conducting substance selected from the group consisting of beta-aluminum oxide, boron silicate glass and sodium-zirconium-phosphorus silicate having the formula $Na_{1-x}Zr_2P_{3-x}Si_xO_{12}$.

4,237,201

IONIC CONDUCTIVITY MATERIALS, SUITABLE FOR CONSTITUTING SOLID ELECTROLYTES FOR DRY CELLS AND BATTERIES

Jean Rouxel, and Luc Trichet, both of Nantes, France, assignors to Agence Nationale de Valorisation de la Recherche, Neuilly sur Seine, France

Continuation-in-part of Ser. No. 768,813, Feb. 16, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,724
Claims priority, application France, Feb. 12, 1976, 76 04598
Int. Cl.[2] H01M *6/18*
U.S. Cl. 429—104 19 Claims

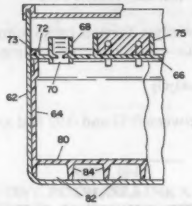
1. A composition having high ionic conductivity and minimal electronic conductivity comprising a stable, intercalatable chalcogenide having a wide energy gap between the bond band and the conduction band and having intercalated therein an equiatomic amount of an alkali metal ion and a metal ion having a valence state of one less than that of the metal of said chalcogenide.

4,237,202

AIRCRAFT BATTERY

David L. Karpal, Redlands, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Nov. 13, 1978, Ser. No. 959,855
Int. Cl.[2] H01M *2/02*
U.S. Cl. 429—120 4 Claims



1. An aircraft battery having an external metallic housing, a casing of thin-walled polypropylene material configured to fit tightly within the metallic housing for containing the chemical reactants therein; and

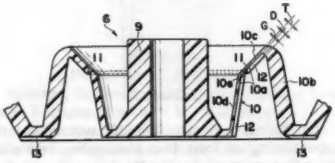
means for insulating a portion of the interior of the casing from the housing.

4,237,203

RUPTURABLE SAFETY SEALING GASKET OF CELL

Takashi Tsuchida, Kosai; Kenichi Shinoda, Toyohashi; Kohei Yamamoto, Kosai, and Toshio Suzuki, Shimozuma, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1978, Ser. No. 965,708
Claims priority, application Japan, Nov. 30, 1977, 52-143621
Int. Cl.[3] H01M *2/12*
U.S. Cl. 429—122 2 Claims



1. A rupturable safety sealing gasket for a cell, said gasket comprising:

a circumferential marginal portion adapted to be constricted between a free end of a metal casing and a peripheral edge of a terminal plate;

an annular center portion through which a metal collector rod is adapted to extend;

an intermediate portion integrally connecting said marginal portion with said center portion;

said intermediate portion including an inwardly projecting annular thin wall surrounding said center portion with a first annular space therebetween and an inwardly projecting annular thick wall having a thickness greater than said annular thin wall and integrally connected to said thin wall at an inner end thereof, said annular thick wall surrounding said annular thin wall to define a second annular space therebetween;

said annular thin wall including a first inner frusto-conical section and a second outer frusto-conical section integrally formed with each other, said first inner frusto-conical section having an imaginary apex angle greater than an imaginary apex angle of said second outer frusto-conical section;

said annular thin wall having in the outer surface thereof a substantially axially extending groove; and

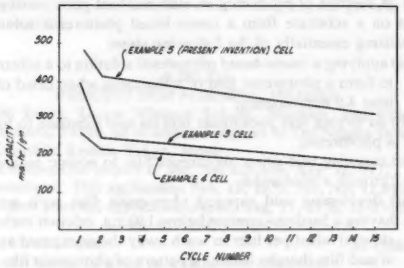
said annular thin wall having in said outer surface thereof, at the juncture of said first and second frusto-conical sections, an annular circumferentially extending groove which intersects said axial groove.

4,237,204

MOLYBDENUM SULFIDE CATHODE STRUCTURE

Arthur H. Thompson, New Providence; Charles R. Symon, Rahway, and Allan J. Jacobson, Princeton, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 29, 1979, Ser. No. 88,828
Int. Cl.³ H01M 6/14
U.S. Cl. 429—194 **7 Claims**



1. An electric current-producing cell, comprising:

(a) an anode having as its anode-active material one or more metals selected from the group consisting of the Periodic Table Group Ia metals, Group Ib metals, Group IIa metals and Group IIb metals;

(b) a cathode, comprising:

(i) metalized containment means having a plurality of apertures therein, said apertures having an average cross-sectional dimension of about 1 to about 100 microns; and

(ii) cathode-active molybdenum sulfide contained within said metalized containment means; and,

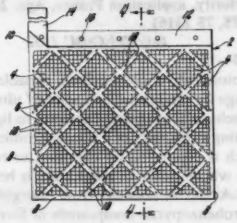
(c) an electrolyte which is chemically inert with respect to said anode and said cathode and which permits the migration of ions between said anode and said cathode.

4,237,205

POCKET GRID FOR ALKALINE BATTERY PLATES

Robert C. Matter, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 22, 1979, Ser. No. 86,737
Int. Cl.³ H01M 4/72
U.S. Cl. 429—234 **5 Claims**



1. A laminated grid for supporting the active material of pasted alkaline storage battery plates comprising:

at least two thermoplastic networks forming the principal faces of the grid and comprising a plurality of intersecting gridwires defining openings therebetween;

a plurality of elongated welds extending as narrow channels across said faces and bonding said networks together, said channels being defined by walls formed by the fusion and exudation of said thermoplastic from said networks at said welds and serving to divide said networks into a plurality of gridwire pockets; and

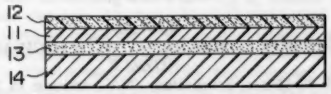
a metal coating on said gridwires and walls sufficient to distribute battery current substantially uniformly across said faces and throughout said active material.

4,237,206

PHOTOGRAPHIC PAPER BASE WITH SEPERATE REFLECTIVE LAYER

Yoshihiro Fujita, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 20, 1978, Ser. No. 971,444
Claims priority, application Japan, Dec. 21, 1977, 52-154227
Int. Cl.³ G03C 1/86
U.S. Cl. 430—11 **3 Claims**



1. A photographic element comprising a paper base, a white adhesive layer disposed on the paper base, a resin layer containing a light reflective material disposed on the white adhesive layer, and a photographic emulsion layer on which an image is formed by printing and development disposed on the resin layer.

4,237,207
PHOTOCHROMIC COMPOSITION CONTAINING INDOLINE SPIROBENZOPYRAN AND COPOLYMER OF PVC AND IMAGED PRODUCT THEREOF

Claude G. Ceintrey, Neuville, France, assignor to La Cellophane, Paris, France

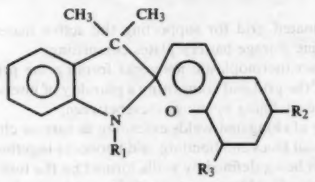
Continuation of Ser. No. 866,349, Jan. 3, 1978, abandoned, which is a continuation of Ser. No. 676,872, Apr. 14, 1976, abandoned. This application Jul. 20, 1979, Ser. No. 59,229

Claims priority, application France, Apr. 24, 1975, 75 12750; Apr. 28, 1975, 75 13161

Int. Cl.³ G03C *1/52*

U.S. Cl. 430—17 **11 Claims**

1. A photosensitive composition capable of producing a colored image by imagewise exposure of ultraviolet radiation, said image being stable against exposure to light, darkness, and heat, consisting essentially of a photochromic spiropyran compound which is converted by exposure to radiation having a wavelength whose order of magnitude is between 2000 A to about 4000 A and is selected from the group consisting of indoline spirobenzopyran compounds of formula (I):



(I)

in which R_1 is an alkyl group of 1 to 10 carbon atoms or a phenyl group;

R_2 is H, OH, Cl, Br, NO_2, methoxy or ethyoxy; and R_3 is H, Cl, Br, NO_2, methoxy or ethoxy with the proviso that at least one of R_2 and R_3 is a chromophoric substituent; said spiropyran compound being uniformly dispersed in, as a binder, vinyl chloride resin comprising a vinyl chloride copolymer containing at least 50 percent, by weight, of vinyl chloride units.

4,237,208
SILANE ELECTRON BEAM RESISTS

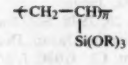
Nitin V. Desai, Somerset, and Eugene S. Poliniak, Willingboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 15, 1979, Ser. No. 12,961

Int. Cl.² G03C *5/00*; C08F *2/46, 30/08*; C08G *77/00*

U.S. Cl. 430—270 **7 Claims**

1. A medium for electron beam recording which comprises a film of a polymer having a repeating unit of the formula



wherein R is an alkyl or acyl group and n is an integer, an electrically conductive layer and a support.

4,237,209
EROSION LITHOGRAPHY WITH HIGH-ASPECT NOZZLE

David W. Oliver, Schenectady, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 9, 1979, Ser. No. 37,258

Int. Cl.³ G03C *5/00*; B24B *7/00*

U.S. Cl. 430—317 **9 Claims**

1. The method of making a precise bonded grid on a cathode, comprising the steps of:

(a) forming an insulator layer on said cathode,

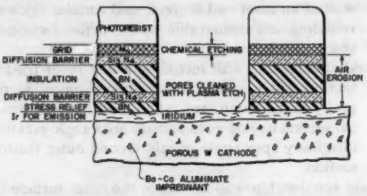
(b) forming a metal layer for the grid, on the insulator layer,

(c) forming a photo-resist layer on the metal layer,

(d) exposing the photo-resist layer with means to form a grid pattern, followed by a developing process which selectively removes part of the photo-resist layer to expose openings of said grid pattern,

(e) removing the metal layer in said openings,

(f) using air blasting with an abrasive powder to remove the insulator layer in said openings, with the photo-resist and the metal layer acting together as a mask;



the improvement wherein for step (f) a special elongated nozzle and scanning provides substantially uniform abrasion over the entire exposed surface of said insulator layer, wherein the nozzle has an exit which is relatively long in one dimension and narrow in the orthogonal dimension to provide a substantially uniform velocity of the abrasive powder along the long dimension, and the scanning of the grid-cathode structure with respect to the nozzle comprises successive passes in a direction generally perpendicular to the long dimension of the projection of the nozzle.

4,237,210
AQUEOUS PHOTORESIST METHOD

Robert S. Dougherty, Tustin, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 8, 1978, Ser. No. 967,793

Int. Cl.³ C23F *1/02*; G03C *5/00, 5/24*

U.S. Cl. 430—318 **7 Claims**

1. A method of producing an etch resistant photoresist pattern on a substrate from a casein-based photoresist solution consisting essentially of the following steps:

(a) applying a casein-based photoresist solution to a substrate to form a photoresist film of a thickness when dried of at least 4.0 micrometers;

(b) air drying said photoresist film on said substrate to form a photoresist;

(c) exposing said dried photoresist film to actinic radiation through a photomask;

(d) developing said exposed photoresist film with water having a hardness content below 150 mg. calcium carbonate equivalent per liter to wash away the unexposed areas of said film thereby leaving a pattern of photoresist film on said substrate which is etch resistant.

4,237,211
PHOTOCHROMIC AZIRIDINE RECORDING MEDIA

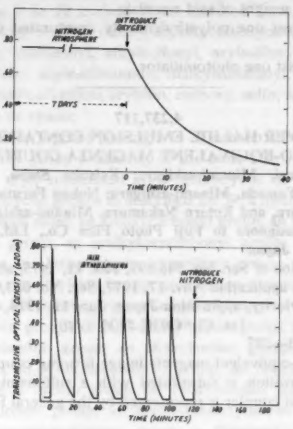
Dan L. Fanselow, White Bear Lake, MN, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

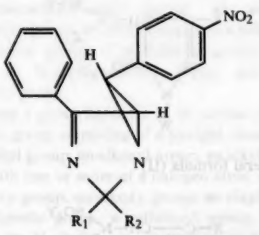
Continuation of Ser. No. 811,255, Jun. 29, 1977, abandoned. This application Dec. 28, 1978, Ser. No. 973,931

Int. Cl.³ G03C *1/52*

U.S. Cl. 430—338 **10 Claims**

1. A thermally stable, optically erasable recording medium comprising a substrate having on at least one surface thereof a thin, homogeneous, transparent, non-dendritic vapor-deposited film of at least one photochromic aziridine of the formula





wherein R_1 and R_2 separately are hydrogen, phenyl, lower alkyl, or ortho or para lower alkyl or lower alkoxy-substituted phenyl or together are alkylene having 4 to 7 carbon atoms; and overlying said film a substantially oxygen-impermeable barrier coating, said coating being reasonably transparent to actinic radiation and capable of inhibiting crystal growth of said aziridine.

4,237,212

PROCESS FOR FORMING IMAGES

Eiichi Inoue, Tokyo; Misturu Takeda, Machida, and Fumio Shimada, Tokyo, all of Japan, assignors to Dai Nippon Insatu Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 825,109, Aug. 16, 1977, abandoned. This application Feb. 13, 1979, Ser. No. 11,849
Claims priority, application Japan, Aug. 17, 1976, 51-97468
Int. Cl.³ G03C *5/24*
U.S. Cl. 430—346 **12 Claims**

1. An image-forming process which comprises

(1) irradiating at least 100 mJ/cm² of imagewise ultraviolet rays an image-forming agent selected from the group consisting of polyacids of molybedenum and tungsten, alkali metal salts and ammonium salts of said polyacids and amine complexes and metal complexes of said polyacids, said image-forming agent being provided in layer form on at least one surface of a substrate and co-existing with a reducing agent, thereby to cause the same to undergo reduction and coloring in the form of the image,

(2) irradiating the entire expanse of the image-forming agent surface thus obtained including colored parts and yet uncolored parts with long wavelength light rays which are absorbable by only the colored parts thereby to form a colored image wherein only the colored parts selectively have remarkably increased optical densities, and

(3) contacting residual image-forming agent remaining in non-image parts with an alkaline substance whereby said

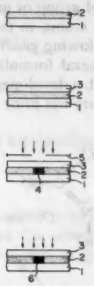


image-forming agent is caused to lose its image-forming capability.

4,237,213

IMAGE FORMING METHOD

Ichiro Endo, Yokohama; Hajime Kobayashi, Mitaka; Yasuhiro Yano, Tokyo, and Takao Muramatsu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 763,087, Jan. 27, 1977, abandoned. This application Oct. 3, 1978, Ser. No. 948,238
Claims priority, application Japan, Jan. 30, 1976, 51/8978; Jan. 30, 1976, 51/8979
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—353 **5 Claims**

1. In the process for forming a negative silver image employing a dry silver photosensitive member by imagewise exposing said member to form a latent silver image and heat developing the latent silver image to form a negative silver image, said photosensitive member having a tendency to deteriorate in image-forming ability upon storage, the improvement comprising in sequence:

(a) forming a photosensitive member comprising an organic silver salt, a halide and a binder,

(b) storing said photosensitive member prior to use for at least about several weeks and thereafter

(c) adding a reducing agent to said member to foster heat development during a period from prior to image exposing to simultaneously with heat-developing.

4,237,214

PROCESS FOR FORMING CONTRASTY IMAGE

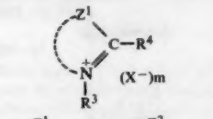
Hiroyuki Mifune; Shunji Takada; Yoshitaka Akimura, and Nobuyuki Tsujino, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

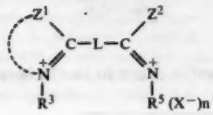
Continuation of Ser. No. 861,087, Dec. 15, 1977, abandoned. This application Jul. 5, 1979, Ser. No. 54,762
Claims priority, application Japan, Dec. 21, 1976, 51-154493
Int. Cl.³ G03C *5/30*
U.S. Cl. 430—441 **13 Claims**

1. A process for forming a negative photographic image which comprises developing with a developing solution containing at least one para dihydroxy benzene compound as a developing agent an imagewise exposed photographic light-sensitive material comprising a support having thereon at least one layer of a negative image providing monodispersed silver halide photographic emulsion comprising substantially surface latent image type monodispersed silver halide grains, wherein the average grain size of the silver halide grains is 0.7 micron or less, with the silver halide photographic emulsion containing a binder in an amount of 250 g or less per mol of silver halide, and at least one hydrographic colloid layer containing a compound represented by the following general formula (I):

$R^1NHNHCOR$ (I)

wherein R^1 represents an aryl group and R^2 represents a hydrogen atom, a phenyl group or an unsubstituted alkyl group having 1 to 3 carbon atoms, in the presence of a compound represented by the following general formula (II) or (III), said compound of the general formula (II) or (III) being in the light-sensitive material, a developer solution or in a processing bath used after exposure but prior to development


(II)


(III)

wherein Z^1 and Z^2, which may be the same or different, each represents an atomic group necessary to complete a thiazole ring or a selenazole ring; R^3 and R^5, which may be the same or different, each represents an alkyl group or an alkenyl group; R^4 represents a hydrogen atom or an alkyl group; and R^3 and R^4 may combine to form a ring; L represents a sulfur atom or a divalent hydrocarbon group having 1 to 12 carbon atoms; X^- represents an acid anion; m represents 0 or 1; n represents 0, 1 or 2 and when an inner salt or inner salts are formed m represents 0 or n represents 0 or 1.

4,237,215

HEAT-DEVELOPABLE LIGHT-SENSITIVE MATERIAL

Shinpei Ikenoue, and Takao Masuda, both of Asaki, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 522,963, Nov. 11, 1974, abandoned. This application Apr. 20, 1978, Ser. No. 898,043

Claims priority, application Japan, Feb. 19, 1974, 49/19760; Nov. 9, 1974, 49/126658

Int. Cl.[2] G03C *1/02*

U.S. Cl. 430—619 **33 Claims**

1. In a method of preparing a heat developable light-sensitive material comprising on a support at least one layer containing (a) an organic silver salt; (b) a light-sensitive silver halide; (c) a reducing agent; and (d) a binder; the improvement which comprises increasing the sensitivity of and improving the gradation of said light-sensitive material by decomposing a N-halo compound in the presence of the organic silver salt (a) and an alcohol for reaction with the organic silver salt (a) to produce the light-sensitive silver halide (b) before applying the layer on the support.

4,237,216

PHOTOSENSITIVE PATTERNABLE COATING COMPOSITION CONTAINING NOVOLAK TYPE MATERIALS

Eugene R. Skarvinko, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1978, Ser. No. 967,742

Int. Cl.[3] G03C *1/68*; C08F *8/00*

U.S. Cl. 430—280 **19 Claims**

1. A photoprocessable patternable coating composition consisting essentially of:

(A) the reaction product from a mixture consisting essentially of:

(1) at least one epoxidized nonlinear novolak having at least about six terminal epoxy groups; with

(2) at least about 0.9 moles of at least one monoethylenically unsaturated carboxylic acid per epoxide equivalent weight of said novolak;

(B) at least one polyethylenically unsaturated compound; and

(C) at least one photoinitiator.

4,237,217

SILVER HALIDE EMULSION CONTAINING TWO-EQUIVALENT MAGENTA COUPLER

Atsuaki Arai, Minami-ashigara; Keisuke Shiba, Shizuoka; Minoru Yamada, Minami-ashigara; Nobuo Furutachi, Minami-ashigara, and Kotaro Nakamura, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

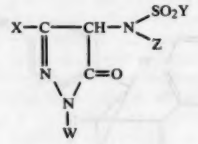
Continuation of Ser. No. 585,899, Jun. 11, 1975, abandoned. This application Nov. 17, 1977, Ser. No. 853,051

Claims priority, application Japan, Jun. 11, 1974, 49-66378

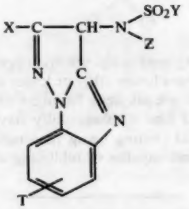
Int. Cl.[3] G03C *7/00, 1/40*

U.S. Cl. 430—387 **34 Claims**

1. A two-equivalent magenta image forming coupler whose coupling position is substituted with a sulfonamido group, wherein said coupler is represented by the general formula (I)



or by the general formula (II)



wherein W represents a hydrogen atom or a group having 1 to 35 carbon atoms selected from the group consisting of a straight chain or branched chain alkyl group; an alkenyl group; a cycloalkyl group; a substituted alkyl, substituted alkenyl or substituted cycloalkyl group, each containing one or more of a halogen atom a nitro group, a cyano group, an aryl group, an alkoxy group, an aryloxy group, a carboxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, a sulfo group, a sulfamoyl group, a carbamoyl group, an acylamino group, a ureido group, a heterocyclic group, an arylsulfonyloxy group and an oxo group as a substituent; an aryl group; a substituted aryl group containing one or more of an alkyl group, an alkoxy group, an aryloxy group, an alkoxycarbonyl group, an acylamino group, a carbamoyl group, an alkylcarbamoyl group, a dialkylcarbamoyl group, an arylcarbamoyl group, an alkylsulfonyl group, an arylsulfonyl group, an alkylsulfonamido group, an arylsulfonamido group, a dialkylsulfamoyl group, an alkylarylsulfamoyl group, an alkylthio group, an arylthio group, a cyano group, a nitro group, a carboxy group, a sulfo group, and a halogen atom as a substituent; a heterocyclic group containing one or more of a nitrogen atom, an oxygen atom and a sulfur atom as a hetero atom; a substituted heterocyclic group containing the above described hetero atoms and substituted with the substituents above described for the aryl group; a carbamoyl group; and a thiocarbamoyl group;

T represents a hydrogen atom, a halogen atom or a group having 1 to 22 carbon atoms selected from the group consisting of alkyl, alkoxy, aryloxy, alkoxycarbonyl, acylamino, carbamoyl, alkylsulfonyl, arylsulfonyl, alkylsulfonamido, arylsulfonamido, dialkylsulfamoyl, alkyl-arylsulfamoyl, alkylthio, arylthio, carboxy, sulfo, aryl, heterocyclic or cyano;

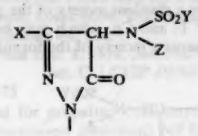
X represents a group having 1 to 35 carbon atoms selected from the group consisting of the same alkyl, substituted alkyl, aryl, substituted aryl, heterocyclic or substituted heterocyclic groups as described for W; a hydrogen atom; a halogen atom; an alkoxycarbonyl group; an aryloxycarbonyl group; an aralkyloxycarbonyl group; a hydroxy group; an alkoxy group; an aryloxy group; a mercapto group; an alkylthio group; an arylthio group; a carboxy group; an amino group; an alkylamino group; a cycloalkylamino group, an N,N-dialkylamino group; an N-alkyl-N-arylamino group; an N-arylamino group; an amido group; an N-alkylacylamino group; an N-arylacylamino group; a ureido group; an N-arylureido group; an N-alkylureido group; an alkoxycarbonylamino group; an aryloxycarbonylamino group; a thioureido group; an N-alkylthioureido group; an N-arylthioureido group; an alkoxythiocarbonylamino group; an aryloxythiocarbonylamino group; a carbamoyl group; a sulfamoyl group; a piperidino group; a pyrrolidino group; a guanidino group; an N-alkylguanidino group; and an N-arylguanidino group;

Y represents a group having 1 to 40 carbon atoms selected from the group consisting of a straight chain or branched chain alkyl group; an alkenyl group; an alkyl group substituted with one or more of a halogen atom, a nitro group, a carboxy group, an alkoxy group, an alkylamido group, an arylamido group, a sulfamoyl group, a carbamoyl group, an N-alkylamino group, an N,N-dialkylamino group, an N-arylamino group, an alkylthio group, and arylthio group as substituents; an aryl group; an aryl group substituted with one or more of a halogen atom, a nitro group, a cyano group, an alkyl group, an aralkyl group, an alkenyl group, an alkoxy group, an aryloxy group, a carboxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, an acyloxy group, an alkylamido group, an arylamido group, a diacylamino group, a sulfamoyl group, a sulfonamido group, an alkoxycarbonylamino group; an aryloxycarbonylamino group; a thioureido group, an alkoxythiocarbonylamino group; an aryloxythiocarbonylamino group; a carbamoyl group, an N-alkylamino group, an N,N-dialkylamino group, an N-arylamino group, an alkylthio group, an arylthio group, a sulfo group, a sulfinyl group and a carbonyl group as substituents; a heterocyclic group containing one or more of a nitrogen atom, an oxygen atom and a sulfur atom as a hetero-atom; and a substituted heterocyclic group containing the above described hetero atoms and substituted with the substituents above described for the aryl group; and

Z represents a hydrogen atom or the same alkyl, substituted alkyl, aryl, substituted aryl, heterocyclic or substituted heterocyclic groups as described for Y; or represented by the general formulas (IIIa) to (IIId)

$$Cp—W'—Cp \qquad \text{(IIIa)}$$

wherein W' represents a divalent moiety of the groups hereinbefore described for W; and Cp, which may be the same or different, each represents a moiety of the general formula (Ia)

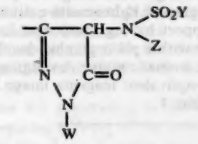


(Ia)

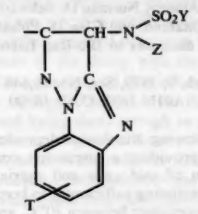
wherein X, Z and Y are as hereinbefore described;

$$Cp—X'—Cp \qquad \text{(IIIb)}$$

wherein X' represents a divalent moiety of the groups hereinbefore described for X; and Cp, which may be the same or different, each represents a moiety of the formula (Ib) or (IIa)



(Ib)

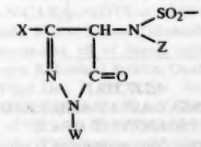


(IIa)

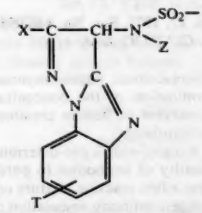
wherein T, W, Y and Z are as hereinbefore described;

$$Cp—Y'—Cp \qquad \text{(IIIc)}$$

wherein Y' represents a divalent moiety of the groups hereinbefore described for Y; and Cp, which may be the same or different, each represents a moiety of formula (Ic) or (IIb)



(Ic)

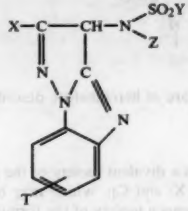


(IIb)

wherein T, W, X and Z are as hereinbefore described;

$$Cp—T'—Cp \qquad \text{(IIId)}$$

wherein T' represents a divalent moiety of the groups hereinbefore described for T; and Cp, which may be the same or different, each represents a moiety of the formula (IIc)



(IIc)

wherein X, Y and Z are as hereinbefore described.

29. A method of forming a color image comprising developing an exposed photographic light-sensitive silver halide material comprising a support having thereon at least one silver halide emulsion layer with a photographic developer solution containing a primary aromatic amine developing agent in the presence of the two-equivalent magenta image forming coupler as set forth in claim 1.

4,237,218

MICRO-CARRIER CELL CULTURE

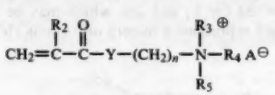
James F. Monthony, Albany; Norman D. Schwartz, El Cerrito; Donald F. Hollis, Oakland, and Gian D. Polastri, San Francisco, all of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Feb. 9, 1979, Ser. No. 10,648

Int. Cl.[3] **A01N** *1/02;* **C08F** *18/00*

U.S. Cl. 435—2 **5 Claims**

1. A method for growing attachment-dependent cells comprising the steps of providing a suspension comprising cell carriers, an inoculum of said cells and nutrient-containing growth medium, and agitating sufficiently to keep said suspension in motion at a temperature between 20° C. and 45° C., said cell carriers comprising an insoluble cationic copolymer having a charge density of 0.050–0.150 meq/ml formed from the copolymerization of a) a hydrophilic monomer; b) a cross-linking monomer selected from the group consisting of di- and poly vinyls; and c) a cationic monomer of the formula:



4,237,219

RADIOIMMUNOASSAY ASSAY AND REAGENTS FOR MB ISOENZYME OF CK

Robert Roberts, St. Louis, Mo., assignor to Washington University, St. Louis, Mo.

Filed Oct. 27, 1977, Ser. No. 846,095

Int. Cl.[3] **C12Q** *1/66, 1/50*

U.S. Cl. 435—7 **15 Claims**

1. A competitive displacement radioimmunoassay method for quantitative determination of the concentration of a B subunit-containing isoenzyme of human creatine kinase in a sample, said method comprising:

(1) incubating said sample with a pre-determined stoichiometric excess quantity of antibodies to purified BB creatine kinase to form a first reaction mixture comprising (a) the product of antigen-antibody association of B subunit-containing isoenzymes in the sample with antibodies to purified BB creatine kinase, and (b) unreacted antibodies to purified BB creatine kinase;

(2) incubating the reaction mixture of step (1) with stoichiometric excess of radioisotopically labelled, purified B subunit-containing isoenzymes of creatine kinase to form a second reaction mixture comprising the association product of step (1) and the product of antigen-antibody association of said labelled isoenzymes with said unreacted antibodies in said first reaction mixture; and

(3) removing unreacted labelled isoenzymes from said second reaction mixture and ascertaining the concentration of B subunit-containing isoenzymes in said sample on the basis of the extent of antigen-antibody association between said antibodies and said labelled isoenzyme.

4,237,220

PROCESS FOR PREPARING 9α-HYDROXY-4-ANDROSTENE-3,17-DIONE

Klaus Kieslich, Berlin, Fed. Rep. of Germany, assignor to Schering, Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Nov. 19, 1979, Ser. No. 95,740

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2850047

Int. Cl.[3] **C12P** *33/06*

U.S. Cl. 435—58 **1 Claim**

1. A process for preparing 9α-hydroxy-4-androstene-3,17-dione, comprising,

fermenting 4-androstene-3,17-dione with a culture of *Corynespora cassicola* ATCC 16,718.

4,237,221

PROCESS FOR OBTAINING MALTOSE PHOSPHORYLASE AND β-PHOSPHOGLUCOMUTASE AND METHOD OF DETERMINING α-AMYLASE USING SAME

Helmgard Gauhl, and Hans Seidel, both of Tutzing, Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 953,723

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2748036

Int. Cl.[3] **C12N** *9/12;* **C12Q** *1/32, 1/40, 1/48*

U.S. Cl. 435—15 **10 Claims**

1. Process for obtaining an enzyme preparation comprising at least one member selected from the group consisting of maltose phosphorylase and β-phosphoglucomutase from micro-organisms, which process comprises extracting said enzyme preparation from a micro-organism selected from the group consisting of *Lactobacillus brevis* DSM 20054, NCIB 8836, 8561 and 8562, *Lactobacillus plantarum* DSM 20174 and 43, *Lactobacillus reuteri* DSM 20016, *Lactobacillus fermentum* DSM 20052, *Streptococcus spec.* DSM 1118, DSM 1119, DSM 1120 and DSM 1121.

4,237,222

LACTATE OXIDASE PROCESS FOR THE MANUFACTURE THEREOF AND ANALYTICAL METHOD AND KIT FOR THE USE OF THE SAME

Hideo Misaki; Yoshifumi Horiuchi; Kazuo Matsuura, and Saburo Harada, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Jun. 18, 1979, Ser. No. 49,560

Claims priority, application Japan, Jun. 17, 1978, 53-73619

Int. Cl.[2] **C12Q** *1/26;* **C12N** *9/04*

U.S. Cl. 435—25 **10 Claims**

1. An enzyme lactate oxidase having at least the following substrate specificity and enzyme action:

substrate specificity: L-lactic acid

enzyme action: catalyzes the reaction

$$\text{L-lactic acid} + O_2 \rightarrow \text{pyruvic acid} + H_2O_2.$$

4,237,223

SHEET FOR PICKING OFF MICROORGANISMS

Harald Metz, Bickenbach, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Apr. 20, 1979, Ser. No. 31,802

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817503

Int. Cl.[3] C12Q *1/24*

U.S. Cl. 435—30 12 Claims

1. A method of determining the presence of microorganisms on a surface which comprises

contacting the surface to be tested for the presence of microorganisms with an adhesive side of a sheet consisting essentially of a porous, flexible support material having an adhesive surface on at least one side such that when contacted with a microorganism-containing surface, the microorganisms will be adhered thereto; removing the sheet from this surface; placing the sheet on a sterile culture medium for microorganisms, the side placed on the medium being that opposite the side which was in contact with the test surface; incubating the sheet; and analyzing the incubated sheet for the presence of microorganisms.

5. A sheet for picking off microorganisms from a surface which comprises a porous, flexible support material having an adhesive surface on at least one side and which is sterile throughout, said adhesive surface being such that when contacted with a microorganism-containing surface, the microorganisms will be adhered thereto, wherein the porosity of the support material is such that microorganisms cannot pass through the support material but a culture meduim for microorganisms can pass through.

4,237,224

PROCESS FOR PRODUCING BIOLOGICALLY FUNCTIONAL MOLECULAR CHIMERAS

Stanley N. Cohen, Portola Valley, and Herbert W. Boyer, Mill Valley, both of Calif., assignors to Board of Trustees of the Leland Stanford Jr. University, Stanford, Calif.

Continuation-in-part of Ser. No. 959,288, Nov. 9, 1978, which is a continuation-in-part of Ser. No. 687,430, May 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 520,691, Nov. 4, 1974. This application Jan. 4, 1979, Ser. No. 1,021

Int. Cl.[3] C12P *21/00*

U.S. Cl. 435—68 14 Claims

1. A method for replicating a biologically functional DNA, which comprises:

transforming under transforming conditions compatible unicellular organisms with biologically functional DNA to form transformants; said biologically functional DNA prepared in vitro by the method of:

(a) cleaving a viral or circular plasmid DNA compatible with said unicellular organism to provide a first linear segment having an intact replicon and termini of a predetermined character;

(b) combining said first linear segment with a second linear DNA segment, having at least one intact gene and foreign to said unicellular organism and having termini ligatable to said termini of said first linear segment, wherein at least one of said first and second linear DNA segments has a gene for a phenotypical trait, under joining conditions where the termini of said first and second segments join to provide a functional DNA capable of replication and transcription in said unicellular organism;

growing said unicellular organisms under appropriate nutrient conditions; and

isolating said transformants from parent unicellular organisms by means of said phenotypical trait imparted by said biologically functional DNA.

4,237,225

PROCESS FOR PREPARING TUNICAMYCIN

Robert L. Hamill, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 1, 1978, Ser. No. 965,547

Int. Cl.[3] C12P *19/60*

U.S. Cl. 435—75 5 Claims

1. A method for preparing tunicamycin which comprises cultivating *Streptomyces chartreusis* NRRL 3882 in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic conditions until a substantial amount of tunicamycin is produced; separating tunicamycin from co-produced antibiotic A-23187; and isolating tunicamycin.

4,237,226

PROCESS FOR PRETREATING CELLULOSIC SUBSTRATES AND FOR PRODUCING SUGAR THEREFROM

Hans E. Grethlein, Hanover, N.H., assignor to Trustees of Dartmouth College, Hanover, N.H.

Filed Feb. 23, 1979, Ser. No. 14,474

Int. Cl.[3] C13K *1/02;* C12P *7/18, 7/24;* C12R *1/885*

U.S. Cl. 435—99 34 Claims

1. A process for pretreating a cellulosic substance, that comprises: preparing a slurry of the cellulosic substance; adding an acid to the slurry to serve as a catalyst; heating the slurry to a reaction temperature at which the cellulose structure of the cellulosic substance is modified by interaction with the acid to a form which is significantly more susceptible to hydrolysis than the untreated substance; maintaining the reaction temperature of the slurry with the acid therein at said temperature for a time period that is long enough for most of the cellulosic substance therein to be modified to said form, said time period being short enough to prevent formation of significant amounts of glucose from cellulose and/or significant recrystallization of the cellulose structure; and quenching the slurry to reduce to insignificance the reaction between the acid and the thusly modified cellulosic substance.

14. A process for pretreating a cellulosic substance, that comprises forming an aqueous slurry containing the cellulosic substance; heating the slurry to a reaction temperature in the range from about 180° C. to 300° C. for a period of time respectively in the range from about five minutes to a fraction of a minute; and quenching the slurry.

4,237,227

PROCESS FOR PREPARING D-N-CARBAMOYL-α-AMINO ACIDS

Hideaki Yamada, Kyoto; Satomi Takahashi, Takatsuki, and Koji Yoneda, Amagasaki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1977, Ser. No. 862,853

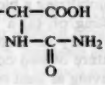
Claims priority, application Japan, Dec. 30, 1976, 51/157713

The portion of the term of this patent subsequent to Jun. 13, 1992, has been disclaimed.

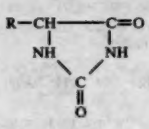
Int. Cl.[3] C12P *13/02*

U.S. Cl. 435—108 8 Claims

1. A process for preparing D-N-carbamoyl-α-amino acids having the following general formula:



wherein R is an alkyl group, a substituted alkyl group, an aralkyl group, or a substituted aralkyl group, which comprises subjecting 5-substituted hydantoins having the following general formula:



wherein R is as defined above, to the action of an enzyme which is in the form of a cultured broth containing microorganisms, or cells or treated cells of said microorganisms, wherein said microorganisms are selected from the group consisting of microorganisms belonging to genus, Achromobacter, Aerobacter, Aeromonas, Agrobacterium, Alcaligenes, Arthrobacter, Bacillus, Brevibacterium, Corynebacterium, Enterobacter, Erwinia, Escherichia, Klebsiella, Microbacterium, Micrococcus, Protaminobacter, Proteus, Sarcina, Serratia, Xanthomonas, Actinomyces, Actinoplanes, Mycobacterium, Nocardia, Streptomyces, Aspergillus, Paecilomyces, Penicillium, Candida, Pichia, Rhodotorula or Torulopsis, in an aqueous medium of pH 7 to 10, said enzyme being capable of hydrolyzing said 5-substituted hydantoins so as to substantially produce only D-forms of N-carbamoyl-α-amino acids, and recovering said D-N-carbamoyl-α-amino acids from the medium.

4,237,228

METHOD OF PRODUCING L-ISOLEUCINE USING *BREVIBACTERIUM FLAVUM*

Nelli I. Zhdanova, Leningradskoe shosse, 112, korpus 3, kv. 748; Tatyana V. Leonova, ulitsa Svobody, 81, korpus 5, kv. 852, and Ljudmila F. Kozyreva, 4 Novopodmoskovny pereulok, 4, kv. 80, all of Moscow, U.S.S.R.

Filed Jun. 22, 1978, Ser. No. 917,989

Claims priority, application U.S.S.R., Jun. 29, 1977, 2501219

Int. Cl.³ C12P *13/06*; C12N *15/00*; C12R *1/13*

U.S. Cl. 435—116 **10 Claims**

1. A method of producing L-isoleucine by direct fermentation of a producing strain comprising:

(A) providing a nutrient medium consisting essentially of sources of carbon, nitrogen, mineral salts, vitamins, and water, with the proviso that precursors of L-isoleucine and amino acids are absent;

(B) cultivating the strain of Brevibacterium flavum VNII Genetika 10-89 deposited under the number CMIM B-1507 in said medium under aerobic conditions until L-isoleucine is accumulated in an amount of at least 17 grams per liter; and

(C) recovering the accumulated L-isoleucine from said medium.

4,237,229

IMMOBILIZATION OF BIOLOGICAL MATERIAL WITH POLYURETHANE POLYMERS

Frank J. Hartdegen, Columbia, and Wayne E. Swann, Pasadena, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 644,025, Dec. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 585,674, Jun. 10, 1975, abandoned. This application Nov. 9, 1977, Ser. No. 849,990

The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.

Int. Cl.² C07G *7/02*

U.S. Cl. 435—182 **73 Claims**

1. A process for immobilizing a biological material selected from the group consisting of: (a) a protein; (b) a coenzyme having at least one primary or secondary amino group per molecule; (c) an admixture of said coenzyme and an enzyme; and (d) an antibiotic having at least one primary or secondary amino group per molecule, the process comprising:

A. contacting the group member and an excess of an isocyanate-capped liquid polyurethane prepolymer in the absence of water to form a resulting mixture where said prepolymer is the reaction product of a polyether polyol with sufficient polyisocyanate to provide at least two free NCO groups per molecule of the prepolymer;

B. shaping the resulting mixture; and

C. curing the shaped resulting mixture by contacting it with a curing agent to form a cured shaped article comprising the immobilized biological material.

4,237,230

NOVEL LACTASE

Takao Iida; Sho Ozaki, both of Shiga, and Toshihiko Kotaka, Otsu, all of Japan, assignors to Daiwa Kasei Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 884,421, Mar. 8, 1978, abandoned. This application Jun. 26, 1979, Ser. No. 52,444

Claims priority, application Japan, May 31, 1977, 52-64347

Int. Cl.³ C12N *9/38*

U.S. Cl. 435—207 **4 Claims**

1. A lactase having a molecular weight of about 3×10^5, an optimum pH value of about 6.0, an optimum temperature of about 60° C. and at least 1 of the ratio of the activity for hydrolyzing lactose to the activity for hydrolyzing o-nitrophenyl-β-D-galactopyranoside.

4,237,231

METHOD OF PURIFYING GLUCOSE ISOMERASE AND A COMPOSITION FOR STORING SAME

Denise M. Jackson, Chicago, and Yoshihisa Tsuda, Highland Park, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 13, 1979, Ser. No. 93,570

Int. Cl.³ C12N *9/92*

U.S. Cl. 435—234 **13 Claims**

1. A process for purifying the enzyme glucose isomerase which comprises:

(a) treating an enzyme solution with acid to a pH from about 3.5 to about 5.0 and collecting the proteinaceous solids;

(b) extracting the proteinaceous solids with a buffer whose solution is at pH 6–8 and collecting the solution;

(c) dissolving therein sufficient salt to attain from about 40% to about 50% of its saturation point and collecting the solution; and

(d) dissolving additional salt in an amount sufficient to attain from about 41% to about 60% of its saturation point and collecting solids containing purified enzyme.

4,237,232

METHOD OF PURIFYING DISTILLERS SOLUBLES AND USE OF THE PURIFIED MATTER

Kiyoshi Yoshizawa, Tokyo; Kikuo Nojiro, Machida; Masamitsu Itoh, Hatoyama; Hiroshi Kiuchi, Sayama, and Kazuo Horii, Otani-Omiya, all of Japan, assignors to National Tax Administration Agency and Kibun Company Limited, both of Tokyo, Japan

Division of Ser. No. 762,680, Jan. 26, 1977. This application May 2, 1978, Ser. No. 902,225

Claims priority, application Japan, May 6, 1976, 51/50746; May 6, 1976, 51/50747; May 6, 1976, 51/50748; Jun. 17, 1976, 51/70428; Sep. 2, 1976, 51/104235

Int. Cl.³ C12N *1/00, 1/20, 1/14, 1/16*

U.S. Cl. 435—243 **5 Claims**

1. In a fermentation medium for the propagation of cells for use as food products, comprising fermentation medium ingredients selected from the group consisting of sugars, polypeptone, amino acid, ions of potassium and phosphate, and mixtures thereof, the improvement wherein

said fermentation medium further comprises a growth factor of molecular weight of 10^3–10^5 derived from distillers solubles by pretreatment with

(1) a centrifugal separation to a degree of above 50,000 (g×minute), or

(2) a filtration with addition of filter aid,

followed by collection of liquid containing molecular

weight range of 10^3–10^5 by subjecting the obtained clarified liquid to a molecular sieve treatment.

4,237,233

METHOD FOR CULTIVATING BASIDIOMYCETES

Chikao Yoshikumi, Kunitachi; Toshihiko Wada, Mibu; Hiromitsu Makita, Tokyo; Kinzaburo Suzuki, Mibu; Azuma Okubo, Mibu; Takishi Nakanoya, Mibu; Katsunori Miura, Mibu, and Tadao Sagi, Mibu, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1977, Ser. No. 819,401

Claims priority, application Japan, Aug. 3, 1976, 51-93074; Aug. 30, 1976, 51-103380

Int. Cl.³ C12N *1/14*

U.S. Cl. 435—254 7 Claims

1. In the method of cultivating a Basidiomycetes fungus in a fermentor under aeration and agitation at a temperature of 25°±2° C. by using an aqueous culture medium containing a saccharide as a carbon source and at least one nutrient source selected from the group consisting of yeast extract, peptone, casamino acid and meat extract and being prone to foaming in the initial stage of cultivation, the improvement wherein the initial charge of said culture medium is less than about 70% of the capacity of the fermentor, initially allowing said culture medium in the fermentor to foam and adding additional charges of said culture medium or a nutrient component selected from the group consisting of yeast extract, peptone, casamino acid and meat extract until at least about eighty-five percent of the fermentor's capacity is occupied by the aqueous culture medium with the proviso that each additional charge is supplied at a point in the course of cultivation when said foaming has subsided.

4,237,234

DEVICE FOR USE IN THE STUDY OF BIOCHEMICAL OR ENZYMATIC REACTIONS PRODUCED BY LIVING ORGANISMS

Henry E. Meunier, 24 ave. Alsace-Lorraine, Grenoble, France (38000)

Filed Oct. 30, 1978, Ser. No. 955,921

Int. Cl.³ C12M *1/20*

U.S. Cl. 435—301 18 Claims

1. A device for the study of biochemical or enzymatic reactions produced by living organisms, comprising a sandwich of two plastic sheets sealed to each other, the first sheet of said sandwich being dimensioned and contoured so as to provide a central open area having upstanding walls, defining a central receptacle, said central receptacle being closed at its bottom by the substantially planar second of said sheets, the said sandwich having internal thereof a plurality of radially-extending cavities providing individual reaction chambers, said reaction chambers having apertures therein at their radially outwardly-extending portions, wherein said apertures are so formed in said reaction chambers as to have upwardly-extended walls to prevent escape of the contents from said reaction chambers, said reaction chambers being in communication with said central receptacle internal of said sandwich, and wherein said chambers are in communication with said central receptacle by means of further cavities providing capillaries of reduced cross-section with respect to said reaction chambers arranged between said reaction chambers and said central receptacle and providing communication between the bottom of said central receptacle and said radially-extending reaction chambers.

4,237,235

URETHANIC POLYMERIZATION BY CHELATING AGENTS ACTING AS CATALYSTS OR COCATALYSTS

Rosalba Mazzucco, Corso Vinzaglio, 3, Torino, Italy

Filed Aug. 21, 1978, Ser. No. 935,379

Int. Cl.³ C08G *18/18, 18/22, 18/14, 18/48*

U.S. Cl. 521—118 9 Claims

1. In a method of producing urethane polymers by reacting isocyanate with hydroxylic polyether compound in the presence of a catalytic amount of chelating agent catalysts or cocatalysts; the improvement in which said catalysts or cocatalysts are complexes of said chelating agents with metallic ions and do not react with the reactive components, said chelating agents being mono- or polycarboxylic amino acids or metallic salts thereof.

4,237,236

PLASTICS MATERIAL AND METHOD OF PRODUCING SAID MATERIAL

Berthold Newitzki, Friedrichsdorf, Fed. Rep. of Germany, assignor to Firma Erich Rühl Chemische Fabrik und Chemikalien-Grosshandel, Friedrichsdorf, Fed. Rep. of Germany

Filed Jun. 6, 1979, Ser. No. 46,012

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825295

Int. Cl.³ C08J *9/04*

U.S. Cl. 521—123 3 Claims

1. A non-combustible material which does not develop toxic fumes when subjected to heat, based upon phenol resins and furfuryl alcohol, characterised by having been obtained by reacting a mixture of

(a) 62 to 76 percent by weight aluminium oxide or aluminium hydroxide;

(b) 12 to 16 percent by weight phenol resin; and

(c) 11.5 to 17.5 percent by weight furfuryl alcohol with

(d) a sulphonic acid in such an amount that the proportion by weight of sulphonic acid groups amounts to about 1/10th to 1/20th of the amount by weight of the aluminium oxide, with subsequent hardening.

4,237,237

HYDROPHOBIC POLYURETHANE FOAMS, THEIR MANUFACTURE AND USE

Wolfgang Jarre, Ludwigshafen, and Rolf Wurmb, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 932,355, Aug. 9, 1978, abandoned. This application Apr. 30, 1979, Ser. No. 34,541

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738268

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—128 4 Claims

1. Hydrophobic polyurethane foams, which have densities of from 4 to 15 g/liters and in which the number of closed cells is from 2 to 30%, and the number of open cells from 98 to 70%, based on the total number of cells, and which are prepared by reacting organic polyisocyanates, polyhydroxy compounds, catalysts and water, with or without blowing agents, lipophilic compounds, chain extenders, assistants and additives, the starting components being reacted in such amounts that

(a) the ratio of all hydrogen atoms capable of undergoing a Zerewitinoff reaction—there hydrogen atoms being bonded to the polyhydroxy compound and water and to the lipophilic compound and chain extender if used—to the NCO groups of the polyisocyanate is from 1.3 to 10:1, and

(b) the ratio of hydrogen atoms capable of undergoing a Zerewitinoff reaction—these hydrogen atoms being bonded to the polyhydroxy compound and to the lipophilic compound and chain extender if used—to the NCO groups of the polyisocyanate is from 0.7 to 1.3:1.

4,237,238

POLYISOCYANURATE FOAMS BASED ON ESTERIFIED DMI OXIDATION RESIDUE ADDITIVE

David T. DeGuiseppi, Wallingford, and Richard A. Kolakowski, Northford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 3, 1979, Ser. No. 81,325
Int. Cl.³ C08G *18/24, 18/42*
U.S. Cl. 521—131 **7 Claims**

1. In a cellular polymer in which the major recurring polymer unit is isocyanurate which polymer comprises the reaction product obtained by bringing together in the presence of a blowing agent, an organic polyisocyanate, a trimerization catalyst and a minor amount of a polyol the improvement which comprises employing as the polyol component from about 0.1 hydroxyl equivalent to about 0.5 hydroxyl equivalent per equivalent of said polyisocyanate of a polyol mixture prepared by the transesterification, with a glycol of molecular weight from about 60 to about 400, of a residue remaining after dimethyl terephthalate and methyl p-toluate have been removed from a dimethyl terephthalate esterified oxidate reaction product the major portion of said residue comprising a mixture of methyl and benzyl esters of benzene and biphenyl di- and tricarboxylic acids.

4,237,239

RETICULATED POLYVINYL CHLORIDE PLASTISOL FOAMS

George L. Lilley, Manheim, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 953,362, Oct. 23, 1978. This application Nov. 5, 1979, Ser. No. 91,351
Int. Cl.³ C08J *9/30, 9/38*; B29D *27/04*
U.S. Cl. 521—134 **4 Claims**

1. A composition for producing a reticulated polyvinyl chloride plastisol foam consisting essentially of (a) a polyvinyl chloride plastisol comprising dispersion grade polyvinyl chloride resin particles, a plasticizer, a stabilizer, and a frothing agent; and

(b) dry blend grade polyvinyl chloride resin particles dispersed in the plastisol of (a) which particles have the ability to take in plasticizer by absorption and to become solvated at a temperature within a range of about 130° to about 180° F. which temperature is below the gelation temperature of said plastisol after said plastisol has been frothed, the resulting solvated dry blend grade polyvinyl chloride particles having a melt temperature greater than the gelation temperature but less than the melt temperature of said plastisol froth.

4,237,240

PROCESS FOR THE MANUFACTURE OF FLEXIBLE POLYURETHANE FOAMS WITH HIGH LOAD-BEARING AND HIGH ENERGY-ABSORPTION CAPACITY

Wolfgang Jarre, Ludwigshafen; Peter Weyland, Frankenthal, and Gerhard Mueller, Munich, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,311
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—159 **7 Claims**

1. A process for the manufacture of flexible polyurethane foams from organic polyisocyanates, polyols, catalysts, foaming agents, and optionally chain extenders, auxiliaries and additives, wherein a mixture of diphenylmethane diisocyanates and polyphenylene polymethylene polyisocyanates having a diphenylmethane diisocyanate content of 55 to 85 percent by weight based on the weight of the isocyanate mixture is used as organic polyisocyanates; that polyester polyols or mixtures of polyester polyols and polyether polyols with a polyester polyol content of 60 to approximately 100 percent by weight based on the total weight of said polyol mixture are used as polyols; and that water or optionally, mixtures of water and low-boiling, halogenated hydrocarbons are used as blowing agents.

4,237,241

COATING COMPOSITIONS INCLUDING HYDROXY PHOSPHATE CATALYST

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 22, 1978, Ser. No. 945,027
The portion of the term of this patent subsequent to Jan. 1, 1980, has been disclaimed.
Int. Cl.³ C08L *63/00, 61/20*
U.S. Cl. 525—110 **10 Claims**

1. A thermosetting coating composition comprising a film forming component and an amine aldehyde compound, which composition cures by reaction between said amine aldehyde compound and hydroxy functionality present on said film forming material, which hydroxy functionality is either initially present, generated in situ, or both initially present and generated in situ, the improvement comprising including in said composition a catalyst for said reaction comprising at least one hydroxy functional organophosphate ester having the formula:

$$(R-O\rightarrow_{n}P(=O)(OH)_{3-n}$$

wherein n=1 to 2 and R is selected from the group consisting of mono- or dihydroxy alkyl, cycloalkyl or aryl radicals.

4,237,242

USES OF CHELATED METAL CATALYSTS FOR ACID/EPOXY POLYMER SYSTEMS

Lawrence S. Frankel, Jenkintown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 650,819, Jan. 20, 1976, Pat. No. 4,131,715. This application Jul. 26, 1978, Ser. No. 928,326
Int. Cl.³ C08L *33/02*
U.S. Cl. 525—119 **7 Claims**

1. A composition comprising a linear addition copolymer, derived from a monomer mixture containing from 5 to 45% by weight of one or more, -ethylenically unsaturated carboxylic acids, the T_g of the copolymer being from −45° C. to 20° C., the copolymer being capable of forming a thermoset resin by reaction with a resin-forming epoxy compound containing a plurality of epoxide groups, and a catalyst in the amount of 0.04% to 10% by weight based on the weight of the addition copolymer, the catalyst being a transition metal chelate stable at ambient temperatures up to about 22° C. and which decomposes to release the chelated metal when heated to temperatures of about 100° C., any quantity of organic solvent present being from 0% to 10% of the combined weight of copolymer and solvent, and which composition contains a resin-forming a polyepoxy compound.

4,237,243

USE OF CROSS-LINKED POLYMERS TO INCREASE THE VISCOSITY IN COSMETIC, PHARMACEUTICAL AND TECHNICAL COMPOSITIONS

Jochen M. Quack, Kelkheim; Alwin Reng, Frankfurt am Main; Juliane Balzer, Frankfurt am Main; Friedrich Engelhardt, Frankfurt am Main, and Joachim Ribka, Offenbach am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 10,519

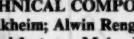
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806098

Int. Cl.³ C08F *8/12, 8/28, 8/44*

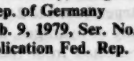
U.S. Cl. 525—154 **8 Claims**

1. Cosmetic, pharmaceutical and technical compositions containing as a thickening agent cross-linked polymers whose polymer chains show the following composition:

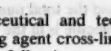
k-p molar % of groups of the formula



p molar % of groups of the formula



from 0 to 45 molar % of groups of the formula



and

from 0.1 to 20 molar % of a cross-linking agent, wherein

R^1 represents as a statistical mean value from 0 to 100 molar % of hydrogen and from 100 to 0 molar %, each calculated on the proportion of (k-p) molar %, of CH_2OH groups,

R^2 and R^3 are hydrogen, or one of the radicals R^2 and R^3 is methyl, the other being hydrogen,

X is cyano, alkoxycarbonyl with from 1 to 8 carbon atoms altogether, whose alkoxy radical may also be substituted by —OH, alkanoyloxy with from 2 to 6 carbon atoms, alkanoylamino with 2 to 8 carbon atoms which—if they have at least 4 carbon atoms—may also be cyclic and then form a pyrrolidone or caprolactam ring, phenyl, carboxyl or trialkoxysilyl with 1 to 2 carbon atoms in the alkoxy groups,

M is an alkali metal cation, and

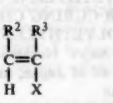
k stands for the range of from 99.9 to 50,

p stands for the range of from 5 to k,

said products being prepared by copolymerizing, calculated on the total molar amount of all monomers,

k molar % of acrylamide, k being defined as above,

from 0 to 45 molar % of a compound of the formula I



(I),

in which R^2, R^3 and X are defined as above, and from 0.1 to 20 molar % of a cross-linking agent in the presence of a radical initiator in a water-miscible alkanol solution, subjecting the polymer paste obtained to strong shearing forces until a uniform flow behavior of the suspension is achieved, mixing said polymer suspension under the action of strong shearing forces with p molar % of an alkali metal hydroxide of the formula MOH, p being defined as above, heating the mixture at a temperature of from 30° to 150° C. up to the saponification of p molar % of amide groups to form —COOM— groups, and either isolating the copolymer obtained or methylolating the same, after removing the ammonia, in a lower alkanol with from 0 to (k-p) molar % of paraformaldehyde, k and p being defined as above, at a temperature of from 10° C. to the boiling point of the lower alkanol employed.

4,237,244

MOLDING COMPOSITION BASED ON UNSATURATED POLYESTERS

Hannes von Harpe; Ludwig Bottenbruch; Bernd Peltzer, and Hansjochen Schulz-Walz, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 3, 1979, Ser. No. 751

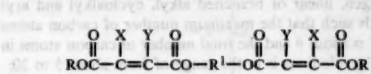
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800468; Nov. 28, 1978, 2851337

Int. Cl.³ C08F *8/46;* C08L *7/00, 23/46, 47/00*

U.S. Cl. 525—171 **6 Claims**

1. Hardenable molding compositions comprising

(a) from 5 to 77 parts, by weight, of a "terminally unsaturated" urethane group-free polyester of the formula



wherein

R^1 represents the difunctional radical reduced by two hydroxyl groups of a polyester which does not contain any α,β-ethylenically unsaturated groups; and X, Y and R represent hydrogen or C_1–C_6 alkyl,

(b) from 20 to 80 parts by weight of a vinyl or vinylidene compound copolymerizable therewith; and

(c) from 3 to 25 parts, by weight, of an elastomeric polymer having a glass transition temperature of from 90° to +10° C.,

a second phase in the form of particles having an average diameter of from 0.1 to 100 μm formed during hardening.

4,237,245

HYDROGENATED BLOCK COPOLYMERS OF BUTADIENE CONTAINING A BLOCK OF 1,4 AND A BLOCK OF 1,2-MICROSTRUCTURE

Adel F. Halasa, Bath; David W. Carlson, and James E. Hall, both of Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 20, 1979, Ser. No. 68,308

Int. Cl.³ C08F *8/04*

U.S. Cl. 525—272 **3 Claims**

1. A thermoplastic elastomeric composition comprising the hydrogenated product of a diblock copolymer having one block predominantly of 1,4-polybutadiene and containing no more than 15 percent by weight of 1,2-microstructure and a second block of 1,2-polybutadiene containing at least 95 percent by weight of 1,2-microstructure, the molecular weight of said 1,2-polybutadiene block representing at least 10 percent of the total molecular weight of said copolymer, the unsaturation in said original diblock copolymer being at least 85 percent hydrogenated.

4,237,246

COPOLYMERS OF 1,3-CYCLODIENES, MONOVINYLAROMATIC COMPOUNDS AND POLYVINYLAROMATIC HYDROCARBONS

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

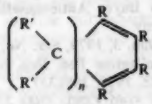
Continuation-in-part of Ser. No. 438,244, Jan. 31, 1974, abandoned. This application Jul. 15, 1976, Ser. No. 705,481

Int. Cl.[3] C08F *4/48, 2/06, 8/04, 32/04*

U.S. Cl. 525—332 20 Claims

1. A method for the production of a 1,3-cyclodiene monovinylaromatic thermoplastic copolymer having essentially a zero percent gel content comprises the steps of:

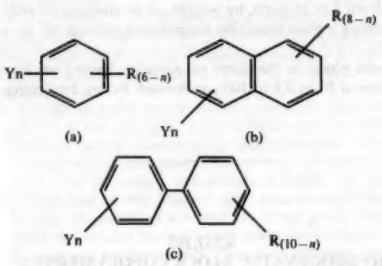
polymerizing a 1,3-cyclodiene represented by the general formula



wherein n is an integer from 1 to 2, each R is selected from the group consisting of hydrogen, methyl and ethyl radicals, each R′ is selected from the group consisting of hydrogen, linear or branched alkyl, cycloalkyl and aryl radicals such that the maximum number of carbon atoms per R′ is about 6 and the total number of carbon atoms in the 1,3-cyclodiene is in the range of from about 5 to 20;

a monovinylaromatic compound wherein the total number of carbon atoms per molecule is in the range of from about 8 to 14; and

a polyvinylaromatic compound represented by the general formulas selected from the group consisting of



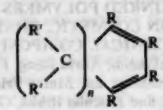
wherein Y is a vinyl radical, each R is selected from the group consisting of hydrogen and lower alkyls with the total of said R groups containing up to 12 carbon atoms and n is an integer of 2 to 3;

wherein said polymerization is carried out in the presence of an organolithium initiator represented by the general formula RLi_x wherein x is an integer from 1 to 4, R is a hydrocarbon radical selected from the group consisting of aliphatic, cycloaliphatic and aromatic radicals and the valence of R is equal to the integer x; and

wherein the amount of polyvinylaromatic hydrocarbon incorporated in the copolymer is in the range of from about 0.02 to 2 parts by weight per hundred parts by weight monomer.

14. A thermoplastic copolymer comprising:

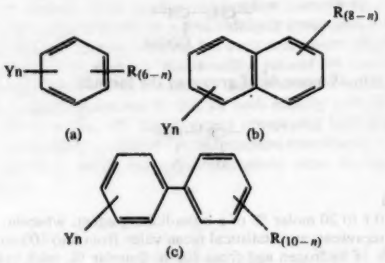
units of a 1,3-cyclodiene represented by the general formula



wherein n is an integer from 1 to 2, each R is selected from the group consisting of hydrogen, methyl and ethyl radicals, each R′ is selected from the group consisting of hydrogen, linear or branched alkyl, cycloalkyl and aryl radicals such that the maximum number of carbon atoms per R′ is about 6 and the total number of carbon atoms per 1,3-cyclodiene molecule is in the range of from about 5 to 20;

units of a monovinylaromatic compound wherein the total number of carbon atoms per unit is in the range of from about 8 to 14; and

units of a polyvinylaromatic hydrocarbon represented by the general formulas selected from the group consisting of



wherein Y is a vinyl radical, each R is selected from the group consisting of hydrogen and lower alkyls with the total of said R groups containing up to 12 carbon atoms and n is an integer of 2 to 3;

wherein the amount of polyvinylaromatic hydrocarbon incorporated in the copolymer is in the range of from about 0.02 to 2 parts by weight per hundred parts by weight monomer.

4,237,247

CHLORINATED POLYETHYLENE COMPOSITION AND PROCESS FOR CURING CHLORINATED POLYETHYLENE

Yasuo Matoba, Suita; Akira Hashimoto, Itami, and Mikio Sugahara, Kawanishi, all of Japan, assignors to Osaka Soda Co. Ltd., Osaka, Japan

Division of Ser. No. 781,300, Mar. 25, 1977, Pat. No. 4,165,416. This application Apr. 21, 1978, Ser. No. 898,914

Claims priority, application Japan, Aug. 2, 1976, 51-92638; Aug. 24, 1976, 51-101377; Aug. 24, 1976, 51-101378; Jan. 1, 1977, 52-6962

Int. Cl.[3] C08F *8/34*

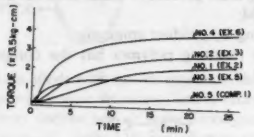
U.S. Cl. 525—335 12 Claims

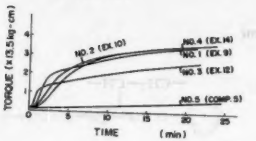
1. A curable chlorinated polyethylene composition free from hexamethylphosphoric triamide complex comprising:

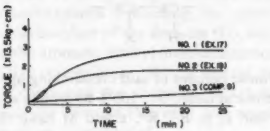
(A) chlorinated polyethylene having a chlorine content of

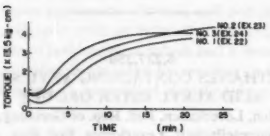
about 20 to 50%, said polyethylene having a molecular weight of about 20,000 to 500,000,

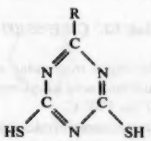
(B) a mercaptotriazine cross-linking agent of the formula







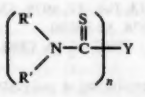




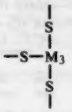
wherein R is a member selected from the group consisting of a mercapto group, alkylamino groups with the alkyl moiety containing 1 to 8 carbon atoms, dialkylamino groups with the alkyl moiety containing 1 to 8 carbon atoms, cycloalkylamino groups with the cycloalkyl moiety containing 6 to 8 carbon atoms, dicycloalkylamino groups with the alkyl moiety containing 6 to 8 carbon atoms, arylamino groups, N-aryl-N-alkylamino groups with the alkyl moiety containing 1 to 8 carbon atoms and alkoxy groups containing 1 to 8 carbon atoms,

(C) a cross-linking accelerator selected from the group consisting of

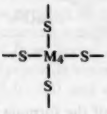
dithiocarbamic compounds of the formula



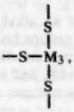
wherein Y is a member selected from the group consisting of $-(S)_x-$ where x is an integer from 1 to 8, $-SM_1$ where M_1 is an alkali metal atom, $-SM_2S-$ where M_2 is a bivalent metal atoms,



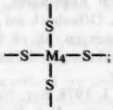
where M_3 is a trivalent metal atom, and



where M_4 is a tetravalent metal atom; n is 2 in the case of $-S)_x$, 1 in the case of $-SM_1$, 2 in the case of $-SM_2S-$, 3 in the case of



and 4 in the case of



and the plurality of R's, which may be the same or different, are each groups selected from the class consisting of C_1–C_{12} alkyl groups, C_3–C_{12} cycloalkyl groups, C_7–C_{12} aralkyl groups and C_6–C_{12} aryl groups, which two R's taken together with the same N atom to which they are attached may form a nitrogen-containing ring; and

(D) an acid acceptor of metal compounds.

4,237,248

CHLORINATED POLYETHYLENE COMPOSITION AND PROCESS FOR CURING CHLORINATED POLYETHYLENE

Yasuo Matoba, Suita; Yoshio Kise; Nobuo Yamada, both of Amagasaki; Akira Hashimoto, Itami, and Tetsuya Nakata, Ibaraki, all of Japan, assignors to Osaka Soda Co. Ltd., Osaka, Japan

Division of Ser. No. 683,678, May 5, 1976, Pat. No. 4,174,341. This application Jun. 27, 1978, Ser. No. 919,677

Claims priority, application Japan, Dec. 19, 1975, 50-152393

Int. Cl.³ C08F *8/34, 8/40*

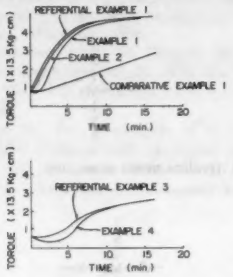
U.S. Cl. 525—335 **6 Claims**

1. A curable chlorinated polyethylene composition comprising:

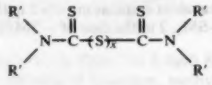
(A) chlorinated polyethylene having chlorine content of about 25 to 45%

(B) a complex formed between hexamethylphosphoric triamide and a member selected from the group consisting of carboxylic acids, cyanuric acid, unsubstituted phenols, phenols substituted with alkyl of 1 to 8 carbon atoms,

hydroxyl, halogen, lower alkoxy or formyl, alcohols and metal salts, and



(C) a thiuram sulfide of the formula



wherein R′ represents an alkyl group containing 1 to 5 carbon atoms, two R′ groups bonded to the same nitrogen atom may together form an alkylene linkage, and x is a positive number of 1 to 4, and sulfur.

4,237,249

PROCESS FOR THE PREPARATION OF CROSSLINKED COPOLYMERS, THE PROCESS PRODUCTS OBTAINED, AND THEIR USE IN TEXTILE PRINTING

Juliane Balzer; Friedrich Engelhardt, both of Frankfurt am Main; Joachim Ribka, Offenbach am Main-Bürgel, and Wolfram Schidlo, Diedenbergen, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 1, 1978, Ser. No. 965,608

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1977, 2754058

Int. Cl.³ C08F *8/28, 8/12, 8/44*

U.S. Cl. 525—369 **8 Claims**

1. The process for the preparation of a crosslinked copolymer composition comprising

(a) polymerizing in the presence of a radical initiator in a water-miscible alkanol solution k mole percent acrylamide with 0 to 45 mole percent of a compound of the formula

and 0.1 to 20 mole percent of a crosslinking agent wherein k is 99.9 to 50, R^2 and R^3 are hydrogen or methyl with the proviso that only one of R^2 and R^3 may be simultaneously methyl, and X is a member selected from the group consisting of cyano, carboxyl, alkoxy carbonyl having a total of 1 to 9 carbon atoms, alkoxy carbonyl with hydroxy substituted alkoxy moiety having 2 to 8 carbon atoms in the hydroxy substituted alkoxy; alkanoyloxy having a total of 2 to 6 carbon atoms, alkanoylamino having a total of 2 to 8 carbon atoms, cyclic alkanoylamino having a total of 4 to 8 carbon atoms, phenyl and trialkoxysilyl having 1 to 2 carbon atoms in the alkoxy;

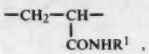
(b) subjecting the polymer paste from (a) to strong shearing forces until a uniform flow behavior of the suspension is achieved; and

(c) mixing the suspension from (b) with the action of strong shearing forces with p mole percent of a hydroxide of the formula MOH wherein p is 5 to k and M is an alkali metal; and

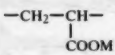
(d) saponifying the polymer mixture from (c) at 30° to 150° C. until p mole percent of amide moieties are saponified to —COOM;

(e) removing by-product ammonia;

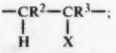
whereby the resulting polymer has the composition of k-p mole percent of



p mole percent



0 to 45 mole percent



and 0.1 to 20 mole percent of said crosslinking agent; wherein R^1 is in the statistical mean, 0 to 100% hydrogen and 100 to 0% —CH_2OH— and k, p, R^2, R^3, x and M have the aforesaid meaning.

4,237,250

POLYURETHANES CONTAINING ARYL SULFONIC ACID ALKYL ESTER GROUPS

Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,616

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2735047

Int. Cl.³ C08L *63/00*

U.S. Cl. 525—440 **16 Claims**

1. Polyurethanes having a molecular weight above 12,000 and containing arylsulfonic acid alkyl ester groups produced by reacting at from 0° to 190° C.

(a) aromatic polyisocyanatosulfonic acids with

(b) oxiranes or oxetanes wherein the equivalent ratio of isocyanate groups (including dimerized isocyanate) to sulfonic acid groups is from 0.1:1 to 1:1 and the equivalent ratio of epoxide, oxetane and mixtures thereof groups to sulfonic acid groups is from 0.2:1 to 5:1.

4,237,251

POLYESTERAMIDES AND PROCESS FOR PRODUCING THE SAME

Toshiaki Ishimaru, Hitachi; Hiroshi Nishizawa, Kitaibaraki, and Yuichi Osada, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Japan

Filed Jan. 11, 1979, Ser. No. 2,752

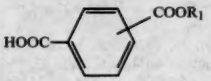
Claims priority, application Japan, Jan. 12, 1978, 53-2452; Feb. 27, 1978, 53-21713; Feb. 27, 1978, 53-21714; Mar. 1, 1978, 53-23401; Mar. 29, 1978, 53-36980

Int. Cl.³ C08G *63/76;* **C08L** *67/02*

U.S. Cl. 525—440 **22 Claims**

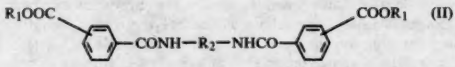
1. A process for producing a polyesteramide which comprises

(i) reacting one or more aromatic monoalkyl dicarboxylates of the formula:



(I)

wherein R_1 is alkyl; with one or more aromatic diisocyanates in the presence or absence of one or more monoalkyl dicarboxylates and/or one or more diisocyanates to produce an aromatic dialkyl diamidedicarboxylate of the formula:



(II)

wherein R_1 is as defined above; and R_2 is a divalent aromatic residue, or to produce a mixture (III) of dialkyl diamidedicarboxylates containing the aromatic dialkyl diamidedicarboxylate of the formula (II), and

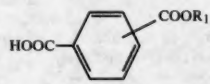
(ii) reacting the aromatic dialkyl diamidedicarboxylate of the formula (II) or a mixture (III) of dialkyl diamidedicarboxylates containing the aromatic dialkyl diamidedicarboxylate of the formula (II) with one member selected from the group consisting of

(a) one or more polyhydric alchols,

(b) one or more polyhydric alcohols and one or more polyvalent carboxylic acids or esters thereof, and

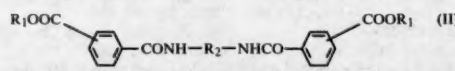
(c) one or more polyhydric alcohols and a linear polyester.

17. A polyesteramide obtained by reacting in the first step one or more aromatic monoalkyl dicarboxylates of the formula:



(I)

wherein R_1 is alkyl; with one or more aromatic diisocyanates in the presence or absence of one or more monoalkyl dicarboxylates and/or one or more diisocyanates to produce an aromatic dialkyl diamidedicarboxylate of the formula:



(II)

wherein R_1 is as defined above; and R_2 is a divalent aromatic residue, or to produce a mixture (III) of dialkyl diamidedicarboxylates containing the aromatic dialkyl diamidedicarboxylate of the formula (II), and reacting in the second step the aromatic dialkyl of diamidedicarboxylate of the formula (II) or a mixture (III) of dialkyl diamidedicarboxylates containing the aromatic dialkyl diamidedicarboxylate of the formula (II) with one member selected from the group consisting of

(a) one or more polyhydric alcohols,

(b) one or more polyhydric alcohols and one or more polyvalent carboxylic acids or esters thereof, and

(c) one or more polyhydric alcohols and a linear polyester.

4,237,252

HEAT ACTIVATABLE ONE-PART LIQUID RESIN SYSTEMS

Richard G. Newell, Woodbury, and Harold E. Rude, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 28, 1979, Ser. No. 52,848

Int. Cl.³ C08G *18/16, 18/58, 18/32*

U.S. Cl. 525—454 **13 Claims**

1. A heat curable, one-part, liquid resin composition comprising

I. A latent catalyst which comprises rupturable, impermeable microcapsules ranging in size from about 0.1 to 20 microns having

(1) shell walls of a crosslinked interfacial polyurethane-polyether reaction product of an aromatic polyisocyanate having an equivalent weight of up to about 380 and a functionality of from about 2 to 6, glycerol and a cycloaliphatic polyepoxide having an equivalent weight of from about 70 to 220 and a functionality of from about 2 to 3, and

(2) liquid fills comprising a Lewis acid-glycerol complex,

II. a cationically curable monomer composition, and

III. a Lewis base scavenger having a pK_b of from about 6 to 11,

there being from 1 to 20 parts of I and 80 to 99 parts of II in the one-part system, the sum of I and II being 100 parts, and there being 0.1 to 35 mole percent of III, based on the moles of Lewis acid in the microcapsules.

4,237,253

COPOLYMERS, THEIR PROCESS OF PREPARATION, AND COSMETIC COMPOUNDS CONTAINING THEM

Bernard Jacquet, Antony; Claude Mahieu, Paris, and Christos Papantoniou, Montmorency, all of France, assignors to L'Oreal, Paris, France

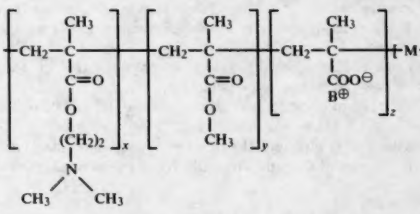
Filed Apr. 18, 1978, Ser. No. 897,435

Claims priority, application France, Apr. 21, 1977, 77 12048; Mar. 14, 1978, 78 07308

Int. Cl.³ C08F *2/00, 4/04, 220/36, 220/54*

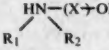
U.S. Cl. 526—75 **17 Claims**

1. Copolymers characterized by the fact that they correspond to the following general formula:



where:

B represents Na, K, NH_4,



or 2-amino-2-methyl propanal-1

R_1 and R_2, identical or different, represent an atom of hydrogen or the radical—(X)—OH;

X represents an alkylene radical, branched or unbranched, having from 1 to 3 atoms of carbon or an alkylene radical, branched or unbranched, substituted by at least one hydroxymethyl radical;

M represents a type of at least one unsaturated monomer taken from the group consisting of the acrylamides or methacrylamides substituted on the nitrogen by an alkyl

radical, branched or unbranched, the acrylates or methacrylates of monoalkyl ether of ethylene glycol or of polyethylene glycol, and N-vinylpyrrolidone;

x is from 22% to 64% in moles,

y is from 13% to 71% in moles,

z is from 6% to 23% in moles, and

v is from 0% to 22% in moles,

x+y+z+v being equal to 100%.

4,237,254

PROCESS FOR PRODUCING OLEFIN POLYMERS

Sadao Kitagawa, Yokohama; Isao Okada, Yokohama; Teruo Saito, Yokohama; Shoichi Masukawa, Amimachi; Yoshihisa Watanabe, Amimachi, and Makoto Imanari, Amimachi, all of Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Apr. 25, 1978, Ser. No. 899,999

Claims priority, application Japan, Apr. 30, 1977, 52-50272; Jan. 9, 1978, 53-960

Int. Cl.³ C08F *4/02, 10/06*

U.S. Cl. 526—122 8 Claims

1. A process for producing steroregular olefin polymers comprising causing an ethylenically unsaturated monomer comprising at least one olefin monomer having at least three carbon atoms to contact with a catalyst system comprising a combination of a catalyst component IA and a catalyst component III,

the catalyst component IA being a solid product obtained by contacting the following constituents (a), (b) and (c) together:

(a) a solid reaction product obtained by reacting magnesium hydroxyhalide with an organoaluminum compound at a temperature of about 0° to 200° C. for about 30 minutes to 10 hours, in an amount of 0.3 to 20 moles of said organoaluminum compound per mole of said magnesium hydroxyhalide so that the reaction of said organoaluminum compound and magnesium hydroxyhalide is substantially complete, said organoaluminum compound having the formula R_nAlX_{3-n} wherein R represents a hydrocarbon residue having from 1 to 20 carbon atoms, X represents a halogen atom and n represents a number satisfying the formula: $0.1<n\leqq 1.5$,

(b) an electron donor which is a carboxylic acid ester, and

(c) a halogen compound of titanium,

the ratio of constituents (a):(b):(c) being 100 g.:0.05 to 1.0 mole:0.005 to 100 moles; and

the catalyst component II being an organometal compound of a metal of Groups I through III of the periodic table.

4,237,255

SUSPENSION STABILIZER FOR P-METHYLSTYRENE SUSPENSION POLYMERIZATION

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,926

Int. Cl.³ C08F *2/20*

U.S. Cl. 526—201 1 Claim

1. In the aqueous suspension polymerization of p-methylstyrene, in which a difficultly soluble phosphate is used as a suspension stabilizer, the improvement which comprises adding to the aqueous suspension, as an extender, sulfonated poly(p-methylstyrene).

4,237,256

PROCESS FOR PRODUCING AN ACRYLONITRILE POLYMER MELT

Toshiyuki Kobashi; Masahiko Ozaki, and Noboru Abe, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Jul. 25, 1978, Ser. No. 927,910

Claims priority, application Japan, Aug. 11, 1977, 52-96801

Int. Cl.³ C08F *20/44, 4/30, 220/14*

U.S. Cl. 526—229 7 Claims

1. In a process for producing an acrylonitrile polymer melt in a substantially clear, ungelled and melted state by polymerizing acrylonitrile alone or a monomer mixture composed mainly of acrylonitrile and, as a further component, at least one other ethylenically unsaturated compound, in a system in which water is present in an amount in the range of from 3 to 50% by weight based on the total amount of the monomer(s) and water, at a temperature above 120° C. and under a pressure which is at least autogeneous pressure, the improvement which comprises using a persulfate as the polymerization initiator, and carrying out the polymerization continuously, while subjecting the polymerization system to sufficient stirring to prevent gelation and coloration.

4,237,257

PROCESS FOR PRODUCING LOW MOLECULAR WEIGHT STYRENE SERIES POLYMERS

Yasuo Moriya, and Takeshi Komai, both of Aichi, Japan, assignors to Nippon Oil and Fats Co., Tokyo, Japan

Filed Jul. 7, 1978, Ser. No. 922,753

Claims priority, application Japan, Jul. 9, 1977, 52-82389; Sep. 2, 1977, 52-104720

Int. Cl.³ C08F *12/08*

U.S. Cl. 526—230.5 11 Claims

1. A process for preparing a polymer having a number average molecular weight of less than 5000, which consists essentially of polymerizing styrene monomer and up to less than 50 mole percent of a different vinyl monomer which is copolymerizable with said styrene monomer, in the presence of from 3 to 10 percent by weight, based on the weight of said monomers, of organic peroxide polymerization initiator whose decomposition temperature for 10 hour half-life in 0.1 molar solution in benzene is from 40° to 70° C., at a polymerization temperature which is from 20° to 30° C. higher than said decomposition temperature of said initiator, until said polymer is formed, and then recovering said polymer.

4,237,258

PROCESS FOR PREPARING VULCANIZABLE ACRYLIC ELASTOMERS

Giuseppe Cantalupo, Busto Arsizio; Sergio De Servi, Legnano, and Agostino Lepori, Fagnano Olona, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Apr. 13, 1979, Ser. No. 29,940

Claims priority, application Italy, Apr. 14, 1978, 22324 A/78

Int. Cl.³ C08F *222/02, 224/00*

U.S. Cl. 526—273 13 Claims

1. Process for the preparation of vulcanizable acrylic elastomers by polymerization, at 40°–80° C. and in the presence of a radical-yielding initiator, of a mixture of monomers consisting prevailingly of an alkyl acrylate in which the alkyl has from 1 to 8 carbon atoms, characterized in that the mixture of monomers subjected to polymerization contains, besides the alkyl acrylate, the following comonomers:

(a) 0.5–2% by weight of an ethylenically unsaturated monomer containing halogen and having one of the following general formulae: R—$COOR_1$; R_1—$COOR_2$; or R_2—O—R_1 wherein R is chloro- or bromoalkyl C_{1-3}; R_1 is alkenyl C_{2-3}; and R_2 is chloro- or bromoalkyl C_{1-4};

(b) 0.5–2% by weight of an ethylenically unsaturated monomer containing an epoxy group and selected from the group consisting of vinyl glycidyl ether, allyl glycidyl

ether, methallyl glycidyl ether, glycidyl acrylate and glycidyl methacrylate;

(c) 0.1–1% by weight of at least one ethylenically unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, maleic acid and fumaric acid; and

(d) 0–0.1% by weight of a polyene having at least two nonconjugated double bonds;

all of the above percentages being referred to the total of the mixture of the monomers.

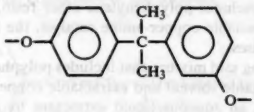
4,237,259

ORGANIC MATERIALS HAVING META, PARA-ISOPROPYLIDENE DIPHENOXY UNITS AND METHOD

Donald E. Keeley, Menlo Park, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 6, 1978, Ser. No. 966,896
Int. Cl.³ C08G *63/62*
U.S. Cl. 528—204 **6 Claims**

1. Thermoplastic polycarbonates having improved flow characteristics and chemically combined units of the formula,



4,237,260

PLASTER CONSISTENCY REDUCER

Robert G. Lange, Villa Park, Ill., and Harley L. Schlotthauer, Okeene, Okla., assignors to United States Gypsum Company, Chicago, Ill.

Continuation of Ser. No. 893,853, Apr. 6, 1978, Pat. No. 4,184,887. This application Jun. 18, 1979, Ser. No. 49,866
Int. Cl.³ C08G *6/00, 10/04*
U.S. Cl. 528—230 **4 Claims**

1. A plaster consistency reducing agent for reducing the amount of water required to be mixed with a dry plaster composition to form a pourable aqueous slurry consisting essentially of a potassium salt of naphthalene sulfonic acid condensate having a molecular weight between about 300 and 3,000, the potassium being present in an amount of about 0.10% to about 30% by weight expressed as K_2O, by weight of the condensate.

4,237,261

PROCESS FOR CONTINUOUSLY PRODUCING POLYESTER AND SPUN FIBER

Hideo Kawamura; Ichiro Fukami; Shuhei Wada, and Fusayuki Yoshikawa, all of Okazaki, Japan, assignors to Nippon Ester Co., Ltd., Okazaki, Japan

Filed Sep. 17, 1979, Ser. No. 75,877
Int. Cl.³ C08G *63/22*
U.S. Cl. 528—272 **11 Claims**

1. In a continuous process for producing polyester which comprises continuously polymerizing bis-β-hydroxyethyl terephthalate and/or a lower polymer thereof using a plurality of vacuum polymerization reactors equipped with a stirrer and disposed in series, the improvement which comprises automatically and continuously measuring the stirring power or stirring axis reaction force of at least the final polymerization reactor from which a polymer having a limiting viscosity (η) of 0.25 or more is removed, and controlling the vacuum in the polymerization reactors according to changes in the stirring power or reaction force so that the stirring power or reaction force value is kept at a prescribed level, by which the degree of polymerization of the polymer removed from the polymerization reactors is controlled.

4,237,262

CURABLE ALIPHATIC EPOXY-POLIMIDE COMPOSITIONS

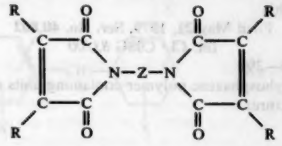
Robert J. Jones, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Feb. 14, 1979, Ser. No. 12,098
Int. Cl.³ C08G *73/10, 59/40*
U.S. Cl. 528—322 **21 Claims**

1. A low temperature curable composition comprising:

(a) at least one curable polyimide prepolymer formed at a temperature sufficient to cause thermal reaction between heated components of a mixture of:

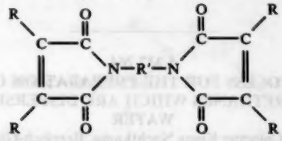
(i) at least one aliphatic bismaleimide of the formula:



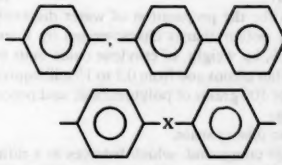
wherein Z is a polyaliphatic ether in which each aliphatic group individually contains from one to about six carbon atoms, and in which each R is independently selected from the group consisting of hydrogen, an aliphatic group containing one or two carbon atoms, a benzenoid radical and a halogen;

(ii) at least one aromatic polyamine; and

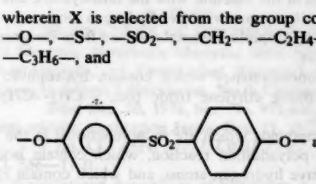
(iii) at least one aromatic bismaleimide of the formula:



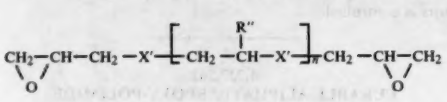
wherein each R is independently selected from the group consisting of hydrogen, an aliphatic group containing one or two carbon atoms, a benzenoid radical and a halogen and wherein R′ is a bifunctional benzenoid radical selected from the group consisting of:



wherein X is selected from the group consisting of: —O—, —S—, —SO_2—, —CH_2—, —C_2H_4—, —CO—, —C_3H_6—, and



(b) at least one epoxy resin of the formula:



wherein X' is selected from the group consisting of: —O—, —S—, $—CH_2—$ and $—CH_2CH_2—$; R'' is selected from the group consisting of: —H, and $—CH_3$; and n is from 0 to about 20.

4,237,263

POLY(MONOALKYL GROUP CONTAINING ORGANOPHOSPHAZENES) AND METHOD FOR THEIR PREPARATION

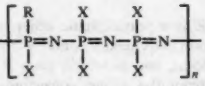
Harry R. Allcock, and Robert J. Ritchie, both of State College, Pa., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 21, 1979, Ser. No. 40,802

Int. Cl.³ C08G *83/00*

U.S. Cl. 528—399 **7 Claims**

1. A polyphosphazene polymer containing units represented by the structure:



wherein R is alkyl containing from 1 to 10 carbon atoms; wherein X is selected from the group consisting of chlorine and —OR' radicals in which R' is the same as R or is selected from the group consisting of substituted alkyl radicals and substituted or unsubstituted aryl radicals and wherein n is from 3 to 15,000.

4,237,264

PROCESS FOR THE PREPARATION OF POLYURETHANES WHICH ARE DISPERSIBLE IN WATER

Klaus Noll, Cologne; Klaus Nachtkamp, Bergisch-Gladbach, and Josef Pedain, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 8, 1977, Ser. No. 849,690

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651506

Int. Cl.³ C08G *18/12, 18/32;* **C08L** *75/08, 75/12*

U.S. Cl. 528—67 **10 Claims**

1. A process for the preparation of water dispersible, substantially linear polyurethanes characterized by a content of from 0.5 to 10%, by weight, of ethylene oxide units built into terminal polyether chains and from 0.1 to 15 milliequivalents of ionic groups per 100 grams of polyurethane, said process comprising reacting:

(a) an organic diisocyanate,

(b) an organic compound, which behaves as a difunctional material in the reaction with the diisocyanate and which contains isocyanate reactive hydrogen atoms,

(c) a first hydrophilic material selected from the group consisting of

(i) monoisocyanates which contain hydrophilic chains containing ethylene oxide (i.e., $—CH_2—CH_2—O—$) units,

(ii) compounds which are monofunctional in the isocyanate polyaddition reaction, which contain isocyanate reactive hydrogen atoms, and which contain ethylene oxide units, and

(iii) mixtures thereof, and

(d) a second hydrophilic material selected from the group consisting of

(i) mono- and/or diisocyanates which contain ionic groups and/or groups capable of conversion into ionic groups,

(ii) compounds which are mono- and/or difunctional in the isocyanate polyaddition reaction, which contain isocyanate reactive hydrogen atoms and which contain ionic groups and/or groups capable of conversion into ionic groups.

4,237,265

PROCESS FOR CATALYST REMOVAL FROM POLYPHENYLENE ETHER REACTION SOLUTIONS

John D. Eliassen, Norwalk, Conn.; Gim F. Lee, Jr., Albany, and James Watson, Jr., New City, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Sep. 8, 1975, Ser. No. 611,266

Int. Cl.³ C08G *65/46*

U.S. Cl. 528—496 **11 Claims**

1. In a process for the liquid-liquid separation of a copper-amine catalyst from a polyphenylene ether resin organic reaction solution wherein a catalyst extracting agent is added to said polyphenylene ether organic reaction solution to form a mixture that includes polyphenylene ether resin, organic solvent and extractable copper-amine catalyst, the improvement which comprises:

(a) extracting said mixture that includes polyphenylene ether resin, organic solvent and extractable copper-amine catalyst with an aqueous liquid extractant by cocurrent or countercurrent liquid-liquid extraction in an extractor in such a manner that a continuous aqueous phase is maintained and a discrete organic phase containing polyphenylene ether resin in solution is contacted by said continuous aqueous phase;

(b) withdrawing from the upper part of said extractor an organic phase containing polyphenylene ether resin in solution that is substantially free of copper-amine catalyst; and

(c) thereafter separating said polyphenylene ether resin from said organic phase to obtain polyphenylene ether resin that is substantially free of copper-amine catalyst.

4,237,266

GLUCAN HAVING ANTITUMOR ACTIVITY

Mamoru Sugiura, Azatogen, Oazakochino, Konan-shi, Aichi-ken, Japan; Hiroyuki Ohno, Takatsuki, Japan; Yutaro Sasaki, Hirakata, Japan, and Kazuaki Hama, Ibaraki, Japan, assignors to Mamoru Sugiura, Aichi and Hitoshi Itoh, Mie, both of, Japan

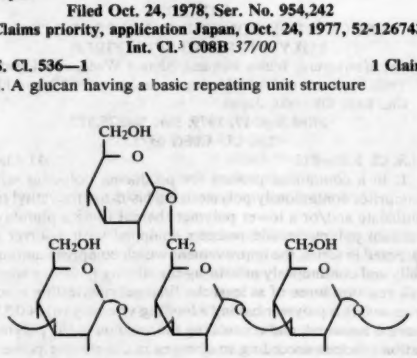
Filed Oct. 24, 1978, Ser. No. 954,242

Claims priority, application Japan, Oct. 24, 1977, 52-126743

Int. Cl.³ C08B *37/00*

U.S. Cl. 536—1 **1 Claim**

1. A glucan having a basic repeating unit structure



and an estimated molecular weight of about two million.

4,237,267

DISULFIDE COMPOUNDS OF A CARRIER, HAVING S—S EXCHANGE REACTIVITY

Tsuneo Okuyama, Yokohama; Tadashiro Fujii, Mishima; Nobuaki Nakagawa, and Kikuo Kotani, both of Shizuoka, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Apr. 30, 1979, Ser. No. 34,861

Claims priority, application Japan, Apr. 28, 1978, 53-49958; Dec. 28, 1978, 53-164909

Int. Cl.[3] C07C *43/305, 513/00;* C07D *519/00*

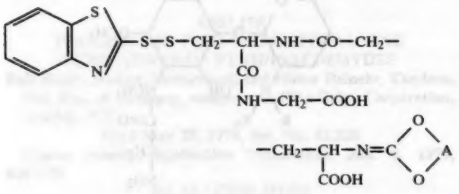
U.S. Cl. 536—1 3 Claims

1. A disulfide compound of a carrier, having S—S exchange reactivity, of the formula

$$R—S—S—X_1—X_2—A \qquad [I]$$

wherein R is 2-benzothiazolyl [or 2-pyridyl-N-oxide], X_1 is a spacer group directly bound to the —S—S— and comprises a plurality of carbon atoms in a straight or branched chain, X_2 is an imide or amide bonding group, and A is an insoluble carrier selected from the group consisting of beads gel agarose residue, gamma-aminopropylated nylon beads residue and a residual group of partially reduced polyacrylonitrile porous granules or fibers.

2. A disulfide compound of the formula



wherein A is beads gel agarose residue.

4,237,268

ESTERS OF ACYLATED AMINOCARBOXYLIC ACID CONTAINING COMPOUNDS

Klaus Walz, and Ergun Tamer, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

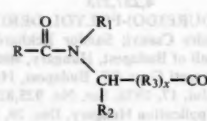
Filed Jul. 18, 1978, Ser. No. 925,885

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1977, 2732557

Int. Cl.[3] C07H *13/02, 11/00;* C07C *101/30, 125/06*

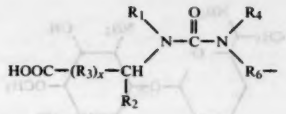
U.S. Cl. 536—4 4 Claims

1. A surface-active ester of a polyhydroxy compound selected from the group consisting of glycerol, erythritol, sorbitol, erythrose, arabinose, xylose, glucose, fructose, galactose, mannose, maltose, polyvinyl alcohols, sucrose, tetralose, raffinose and, alkyl or hydroxyalkyl-glycosides, and an acylaminocarboxylic acid of the formula



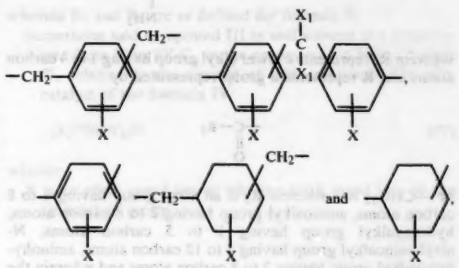
in which

R represents H, C_1–C_4-alkyl, C_1–C_{22}-alkoxy, C_3–C_{22}-alkenoxy, aryl, aralkyl, aroxy, aralkoxy or the radical



R_1, R_4 and R_5 represent H, C_1–C_{22}-alkyl, C_3—C_{22}-alkenyl, cycloalkyl, aryl or aralkyl, or

R^6 represents C_2–C_8-alkylene or a radical of the formula

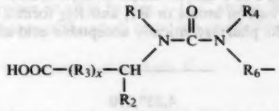


R_2 represents H, COOH, COO C_1–C_4-alkyl or C_1–C_6-alkyl,

R_3 represents C_1–C_{10}-alkylene and

x represents 0 or 1,

wherein at least one of the radicals R_1 to R_5 contains at least 6 carbon atoms, and wherein the alkyl, alkenyl and cyclic radicals may be substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1–C_4-alkoxy and the cyclic radicals may also be substituted by C_1–C_4-alkyl, the total number of carbon atoms being 20 to 60 when R_5 is



and being 12 to 30 when R_5 is H, C_1–C_{22}-alkenyl, cycloalkyl, aryl or aralkyl.

4,237,269

DERIVATIVES OF FORTIMICIN A

Kenichi Mochida, Hiratsuka; Moriyuki Sato; Shigeo Yoshiie, both of Machida, and Yasuki Mori, Kawasaki, all of Japan, assignors to Abbott Laboratories, North Chicago, Ill.

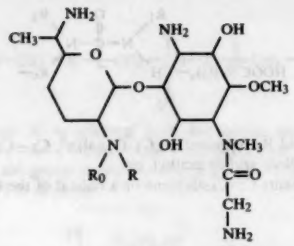
Filed Dec. 20, 1978, Ser. No. 971,435

Claims priority, application Japan, Dec. 21, 1977, 52/153000

Int. Cl.[3] A61K *31/71;* C07H *15/22*

U.S. Cl. 536—17 R 3 Claims

1. 2′-N-substituted derivatives of fortimicin A, represented by the formula:



wherein R_0 represents a lower alkyl group having 1 to 4 carbon atoms and R represents a group represented by

or $—CHR_{11}R_{12}$ wherein R_1 is an alkyl group having 1 to 8 carbon atoms, aminoalkyl group having 2 to 8 carbon atoms, hydroxyalkyl group having 1 to 5 carbon atoms, N-alkylaminoalkyl group having 2 to 12 carbon atoms, aminohydroxyalkyl group having 2 to 8 carbon atoms and wherein the amino group and hydroxy group are bonded to different carbon atoms, or N-alkylaminohydroxyalkyl group having 2 to 8 carbon atoms and R_{11} and R_{12} may be the same or different and are a hydrogen atom, alkyl group having 1 to 8 carbon atoms, aminoalkyl group having 1 to 8 carbon atoms, hydroxyalkyl group having 1 to 5 carbon atoms, carbamoylaminoalkyl group having 2 to 9 carbon atoms, N-alkylaminoalkyl group having 2 to 12 carbon atoms, aminohydroxylalkyl group having 2 to 8 carbon atoms and wherein the amino group and hydroxy group are bonded to different carbon atoms, arylalkyl group having 7 to 12 carbon atoms, N-alkylaminohydroxyalkyl group having 2 to 8 carbon atoms or aryloxyalkyl group having 7 to 12 carbon atoms or R_{11} and R_{12} form a cyclohexyl group and the pharmaceutically acceptable acid addition salts thereof.

4,237,270

DERIVATIVES OF CARBOXYALKYL IMINO- AND THIOXO-BARBITURIC ACIDS

Miroslav Semonský; Rudolf Kotva; Antonin Černý; Jiří Krepelka; Vojtěch Pujman; Oskar Andrysek, all of Prague, Czechoslovakia, and Hana Veselá, deceased, late of Prague, Czechoslovakia (by Jiří Vesely, heir), assignors to SPOFA, United Pharmaceutical Works, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 658,080, Feb. 13, 1976, abandoned. This application Apr. 20, 1978, Ser. No. 898,220

Claims priority, application Czechoslovakia, Feb. 17, 1975, 101675-75

Int. Cl.³ C07D *239/54*

U.S. Cl. 536—18 **6 Claims**

1. 2-Imino-5-(4-carboxybutyl)barbituric acid.

4,237,271

CROSSLINKED STARCH HALOHYDRINS AND THEIR NITROGEN-CONTAINING SUBSTITUTION PRODUCTS

Warren E. Rayford, and Robert E. Wing, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 24, 1979, Ser. No. 32,850

Int. Cl.³ C08B *31/00, 33/00*

U.S. Cl. 536—47 **13 Claims**

1. A water-insoluble, 3-halo-2-hydroxypropyl ether of ungelatinized crosslinked starch having a degree of substitution of said ether of at least 0.1.

4. A method of preparing a water-insoluble 3-halo-2 hydroxypropyl ether of ungelatinized crosslinked starch having a degree of substitution of said ether of at least 0.1 comprising the step of reacting a granular, crosslinked starch having a moisture content of 5–18% based upon its dry weight with a sufficient amount of an epihalohydrin in the presence of a strong acid catalyst.

4,237,272

DERIVATIVES OF FORTIMICIN A

Kenichi Mochida, Hiratsuka; Moriyuki Sato; Shigeo Yoshlie, both of Machida, and Yasuki Mori, Kawasaki, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

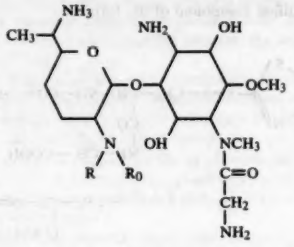
Filed Dec. 20, 1978, Ser. No. 971,438

Claims priority, application Japan, Dec. 21, 1977, 52/153001

Int. Cl.³ A61K *31/71;* **C07H** *15/22*

U.S. Cl. 536—17 R **4 Claims**

1. 2′-N-substituted derivatives of fortimicin A represented by the formula:



wherein R_0 represents a hydrogen atom or R_0 forms, together with a nitrogen atom and R, a substituted or unsubstituted 2-pyrrolidonyl group, wherein the substituents are 1∼2 hydroxyl or amino groups and are bonded to the 3- or 4-position of the pyrrolidonyl group, and R represents $—COR_1$, $—CH_2R_1'$, $—CH(R_1')_2$ or an amidino group, wherein R_1 is an amino group, hydroxyaminoalkyl group wherein the hydroxy group and amino group are bonded to different carbon atoms or carbamoylaminoalkyl group wherein the alkyl groups are lower alkyl groups and R_1' is a diaminoalkyl group, dihydroxyalkyl group, hydroxyaminoalkyl group wherein the hydroxy group and amino group are bonded to different carbon atoms, or guanidinoalkyl group wherein the alkyl groups are lower alkyl groups, and the pharmaceutically acceptable non-toxic acid addition salts thereof.

4,237,273

BIS(NITROSOUREIDO)-POLYOL DERIVATIVES

Tibor Horvath; Endre Csanyi; Sandor Eckhardt, and Emilia Kiraly nee Vida, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Filed Jul. 17, 1978, Ser. No. 925,822

Claims priority, application Hungary, Dec. 29, 1977, GO 1386

Int. Cl.³ A61K *31/70;* **C07H** *5/06*

U.S. Cl. 536—53 **18 Claims**

9. 1,6-Bis[3-(2-chloroethyl)-N-nitrosoureido]-1,6-dideoxy-D-mannitol.

4,237,274

PROCESS FOR THE PREPARATION OF SOLUTIONS OF CELLULOSE DERIVATIVES WHICH CAN BE COAGULATED AND SPUN TO FORM REGENERATED CELLULOSE BODIES

Roberto Leoni, Milan; Alberto Baldini, Garlasco, and Gianfranco Angelini, Buscate, all of Italy, assignors to SNIA VISCOSA Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Feb. 23, 1979, Ser. No. 14,632

Claims priority, application Italy, Feb. 24, 1978, 20540 A/78

Int. Cl.[3] C08B *16/00*; C08L *1/02*

U.S. Cl. 536—56 **23 Claims**

1. A process for the preparation of solutions of cellulose derivatives from which regenerated cellulose bodies may be prepared by coagulation and regeneration, characterized in that a methylol derivative of cellulose is prepared, which derivative contains more than 2 units for formaldehyde per anhydroglucosidic unit, and said derivative is dissolved in an organic spinning solvent selected from the group consisting of polar aprotic solvents containing N-substituted amide moieties in their structure, pyridine, and formamide.

4,237,275

PROCESS FOR PRODUCING HYDRAZONE DERIVATIVES OF PYRIDINALDEHYDES

Rolf Bader, Riehen, Switzerland, and Dieter Reinehr, Kandern, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 29, 1979, Ser. No. 42,828

Claims priority, application Switzerland, Jun. 8, 1978, 6287/78

Int. Cl.[3] C07D *213/53*

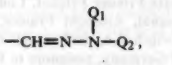
U.S. Cl. 542—417 **12 Claims**

1. A process for producing a compound of the formula I

(I)

wherein

Z is



Q_1 is hydrogen or alkyl having 1–4 C atoms, and

Q_2 is phenyl which can be substituted by halogen, alkyl or alkoxy each having 1–4 C atoms, or is naphthyl,

which comprises the steps of:

reacting in an inert organic solvent an at least stoichiometric amount of an aminomethylpyridine and of a compound of the formula II

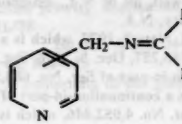
(II)

wherein

R_1 is hydrogen or alkyl having 1–8 C atoms,

R_2 is alkyl having 1–8 C atoms, or R_1 or R_2 together are alkylene having 4–8 C atoms,

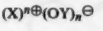
to produce a compound of the formula



(III)

wherein R_1 and R_2 are as defined for formula II,

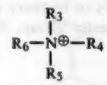
isomerizing said compound III in said solvent at a temperature from 0° to 80° C., in the presence of at least 0.1 mole %, relative to the amount of said compound III, of a catalyst of the formula IV



(IV)

wherein

X is an alkali metal ion or alkaline earth metal ion, or the ammonium group

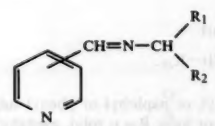


wherein R_3 to R_6 each independently of the other, are unsubstituted straight-chain or branched-chain alkyl having 1–20 C atoms or alkyl having 1–20 C atoms substituted by phenyl or naphthyl,

Y is hydrogen or alkyl having 1–12 C atoms, and

n is the charge of the alkali metal ion or alkaline-earth metal ion,

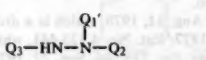
to produce a compound of formula V



(V)

wherein R_1 and R_2 are as defined in formula II, and,

finally converting said compound V, in the presence of at least a stoichiometric amount of an inorganic acid and in an aqueous medium or in in the presence of a catalytic amount of an organic acid and in an inert organic solvent, and in the presence of a compound of the formula VI



(VI),

wherein Q_2 is as defined for formula I,

Q_1' is hydrogen, alkyl having 1–4 C atoms or $-SO_3^{\oplus}\,M^{\ominus}$,

Q_3 is hydrogen or $-SO_3^{\oplus}\,M^{\ominus}$, and

$M^{\oplus}$ is an alkali metal cation,

into a compound of the formula I.

4,237,276
BICYCLIC LACTONE INTERMEDIATES FOR 16-SUBSTITUTED PROSTAGLANDINS

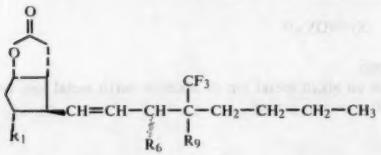
George W. Holland, North Caldwell; Jane L. Jernow, Verona, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 847,881, Nov. 2, 1977, which is a continuation-in-part of Ser. No. 745,257, Dec. 8, 1976, Pat. No. 4,112,225, which is a continuation-in-part of Ser. No. 683,576, May 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 480,458, Jun. 18, 1974, Pat. No. 4,052,446, which is a continuation-in-part of Ser. No. 386,117, Aug. 6, 1973, abandoned. This application Jun. 19, 1979, Ser. No. 50,267

Int. Cl.[3] C07D *307/93*

U.S. Cl. 542—426 6 Claims

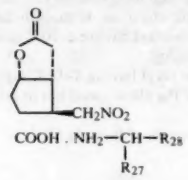
1. A compound of the formula:



wherein R_1 is $-COOR_1'$; lower alkyl or CH_2OR_1'; R_1' is hydrogen or lower alkyl; R_6 is hydroxy or hydroxy protected with a hydrolyzable ether or ester group; R_9 is hydrogen, lower alkyl or fluoro;

or enantiomers or racemates thereof.

5. An optically active salt of the formula



wherein R_{27} is

tolyl, naphthyl or phenyl, or naphthyl or phenyl substituted with amino, nitro or halo; R_{29} is tolyl, naphthyl or phenyl, or naphthyl or phenyl substituted with amino, nitro or halo; R_{28} is CH_2R_{31}; and R_{31} is hydrogen, lower alkyl, hydroxy or lower alkoxy

or its optically active compounds.

4,237,277
2-DECARBOXY-2-HYDROXYMETHYL-9-DEOXY-5,9α-EPOXY-4,5,-DIDEHYDRO-PGF$_1$ COMPOUNDS

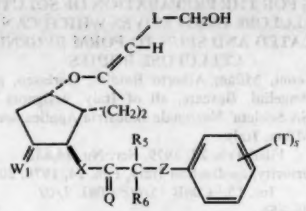
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 932,899, Aug. 11, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,452

Int. Cl.[3] C07D *311/02*

U.S. Cl. 542—426 41 Claims

1. A compound of the formula



wherein W_1 is α—OH:β—H, α—H:β—OH, oxo, methylene, α—H:β—H, α—CH_2OH:β—H;

wherein L is $-(CH_2)_d-C(R_2)_2$,

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro;

wherein Q is oxo, α—H:β—H, α—OH:β—R_8 or α—R_8:β—OH

wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive:

wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—);

wherein Z represents an oxa atom (—O—), a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the phenyl ring;

wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_7$, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; and

wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —CH≡C—, or

(4) $—CH_2CH_2—$;

including the lower alkanoates thereof.

4,237,278
AMINO DERIVATIVES OF 2-METHYL-5-(2-HYDROXYSTYRYL)-1,3,4-THIADIAZOLE

Peter C. Thieme, Wachenheim; Fritz-Frieder Frickel, Ludwigshafen; Helmut Hagen, Frankenthal; Albrecht Franke, Wachenheim; Dieter Lenke, Ludwigshafen, and Josef Gries, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

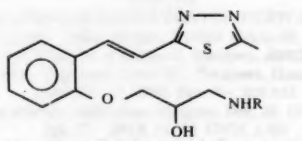
Filed Apr. 17, 1979, Ser. No. 30,842

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, 2818765

Int. Cl.[3] A61K *31/425*; C07D *23/00, 23/14*

U.S. Cl. 542—429 6 Claims

1. A compound of the general formula (I)



(I)

where R is hydrogen, alkyl of 1 to 8 carbon atoms, which is unsubstituted or substituted by hydroxyl, alkoxy of 1 to 3 carbon atoms or cycloalkyl with 3 to 8 carbon atoms in the

ring, alkenyl or alkynyl of 2 to 8 carbon atoms, or cycloalkyl or cycloalkenyl with 3 to 8 carbon atoms in the ring, the cycloalkyl rings being unsubstituted or mono- or di-substituted by alkyl of 1 to 3 carbon atoms, and its addition salts with acids.

4,237,279

CRYSTALLINE 3-HYDROXYCEPHALOSPORIN SOLVATES

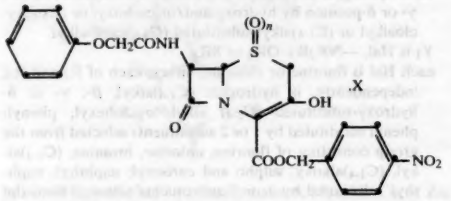
Jack W. Fisher, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 8,468, Feb. 1, 1979, abandoned. This application Jul. 27, 1979, Ser. No. 61,208

Int. Cl.³ C07D *501/20*

U.S. Cl. 544—16 **7 Claims**

1. A cephalosporin solvate of the formula



wherein n is 1 or 0; and X is CH_3COOH, CH_3CH_2COOH or CH_3OH when n is 1, and X is CH_3COOH, CH_3CH_2COOH or $\frac{1}{2}$ CH_2Cl_2 when n is 0.

4,237,280

INTERMEDIATE FOR CEPHALOSPORIN TYPE COMPOUND

Isamu Saikawa; Shuntaro Takano, both of Toyama; Kaishu Momonoi, Shinminato; Isamu Takakura, Toyama; Chiaki Kutani, Funabashi; Kiyoshi Tanaka, Oshimamachi, and Kenshin Hayashi, Tonami, all of Japan, assignors to Toyama Chemical Company, Limited, Tokyo, Japan

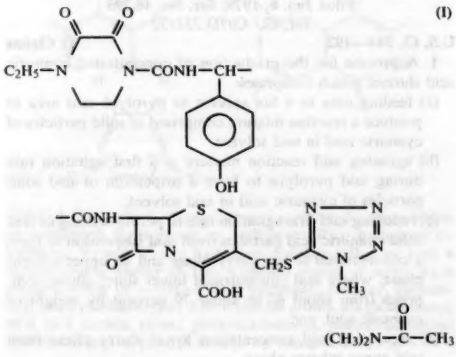
Filed Sep. 25, 1978, Ser. No. 945,346

Claims priority, application Japan, Sep. 27, 1977, 52-115126; Sep. 27, 1977, 52-115127

Int. Cl.³ C07D *501/36*

U.S. Cl. 544—27 **2 Claims**

1. The N,N-dimethylacetamide adduct of 7-[D(−)-α-(4-ethyl-2,3-dioxo-1-piperazinecarboxamido)-α-(4-hydroxyethyl-)acetamido]-3-[5-(1-methyl-1,2,3,4-tetrazolyl)thiomethyl]-Δ^3-cephem-4-carboxylic acid represented by the formula (I),



(I)

4,237,281

DYESTUFFS CONTAINING AMINO OR IMINO GROUPS

William E. Long, Brentwood, England, assignor to Ciba-Geigy Aktiengesellschaft, Basel, Switzerland

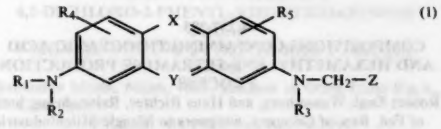
Filed Feb. 23, 1979, Ser. No. 14,780

Claims priority, application United Kingdom, Oct. 13, 1978, 40401/78

Int. Cl.³ C07D *241/46, 265/38, 279/36*

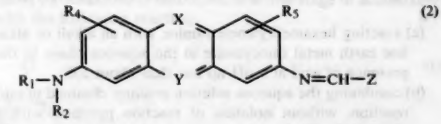
U.S. Cl. 544—99 **9 Claims**

1. A compound of the general formula



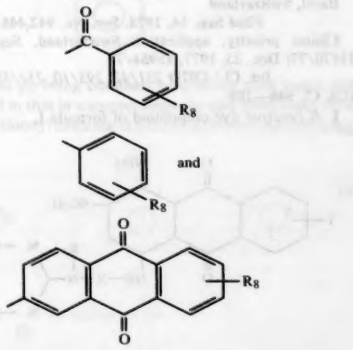
(1)

or of the general formula



(2)

wherein X is N, Y is $S^{\oplus}$, $O^{\oplus}$, N or $N^{\oplus}R_7$ where R_7 is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or phenyl substituted by alkyl of 1 to 4 carbon atoms, halogen, hydroxy or carbonyl, R_1, R_2 and R_3 each represent a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms, or R_1 and R_2 together with the nitrogen atom complete a heterocyclic 5- or 6-membered ring, or one of R_1 and R_2 can be hydrogen and the other of R_1 and R_2 can be phenyl, Z is a member selected from the group of the formulae



and

wherein R_8 comprises a ballasting group of at least 10 carbon atoms, and R_4 and R_5 each represent alkyl of 1 to 4 carbon atoms, amino or halogen or form an annelated benzene ring.

4,23[illegible],282

UREA DERIVATIVE AND USE AS POLYURETHANE CATALYST

George P. Speranza, and Robert L. Zimmerman, both of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Division of Ser. No. 952,027, Oct. 16, 1978. This application May 22, 1979, Ser. No. 41,359
Int. Cl.[3] C07D *265/30*
U.S. Cl. 544—168 1 Claim

1. N-(3-dimethylaminopropyl)-N'-(3-morpholinopropyl-)urea.

4,237,283

COMPOSITIONS CONTAINING THIOCYANIC ACID AND HEXAMETHYLENE-TETRAMINE PRODUCTION PROCESS

Robert Engl, Wasserburg, and Hans Richter, Reitmehring, both of Fed. Rep. of Germany, assignors to Meggle Milchindustrie GmbH & Co., Reitmehring, Fed. Rep. of Germany

Division of Ser. No. 849,262, Nov. 7, 1977, Pat. No. 4,188,386. This application Aug. 15, 1979, Ser. No. 66,855
Int. Cl.[3] C07D *487/18*
U.S. Cl. 544—186 13 Claims

12. A process for the production of a dry composition containing hexamethylenetetramine and thiocyanic acid comprising

(a) reacting hexamethylenetetramine with an alkali or alkaline earth metal thiocyanate in the aqueous phase in the presence of acid at a pH no less than about 5.0;

(b) combining the aqueous solution product obtained in said reaction, without isolation of reaction product, with a physiologically harmless carrier substance substantially inert towards the reaction compounds and the products thereof in an amount such that the ultimate dry composition contains from about 10 to about 60% by weight carrier; and

(c) drying said combined carrier and aqueous solution at a temperature which does not exceed the boiling point of water in said solution.

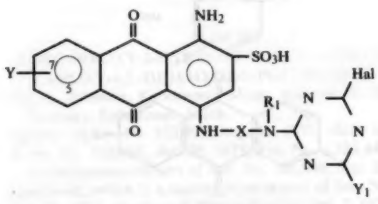
4,237,284

ANTHRAQUINONE REACTIVE DYES

Roland Mislin, Saint-Louis, France, assignor to Sandoz Ltd., Basel, Switzerland

Filed Sep. 14, 1978, Ser. No. 942,446
Claims priority, application Switzerland, Sep. 20, 1977, 11470/77; Dec. 23, 1977, 15954/77
Int. Cl.[3] C07D *251/42, 295/10, 251/50*
U.S. Cl. 544—189 21 Claims

1. A reactive dye compound of formula I,

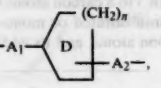


I

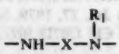
in which

Y is hydrogen or sulpho,

X is a straight chain or branched (C_{2-6}) alkylene group or



in which each of A_1 and A_2, independently, is a direct bond or a (C_{1-4})alkylene group, n is 1 or 2 and the ring D is optionally substituted by up to three (C_{1-4})alkyl groups, with the proviso that when n is 2, the group



is the radical of an unsymmetrical diamine,

R_1 is hydrogen; (C_{1-4})alkyl; (C_{2-4})alkyl substituted in the β-, γ- or δ-position by hydroxy and/or carboxy; or (C_{5-6})cycloalkyl or (C_{1-4})alkyl-substituted (C_{5-6})cycloalkyl

Y_1 is Hal, $—NR_2R_3$, OR_4 or SR_4

each Hal is fluorine or chlorine, either, each of R_2 and R_3, independently, is hydrogen; (C_{1-4})alkyl; β-, γ- or δ-hydroxy-substituted (C_{2-4}) alkyl; cyclohexyl; phenyl; phenyl substituted by 1 or 2 substituents selected from the group consisting of fluorine, chlorine, bromine, (C_{1-4})alkyl, (C_{1-4})alkoxy, sulpho and carboxyl; naphthyl; naphthyl substituted by 1 or 2 substituents selected from the group consisting of sulpho and carboxyl; or sulpho- or carboxyl-substituted (C_{1-4})alkyl,

or R_2 and R_3 together with the nitrogen atom to which they are bound form a piperidine or morpholine ring,

R_4 is (C_{1-4})alkyl; β-, γ- or δ-hydroxy-substituted (C_{2-4})alkyl; phenyl; or phenyl substituted by 1 or 2 substituents selected from the group consisting of fluorine, chlorine, bromine, (C_{1-4})alkyl, (C_{1-4})alkoxy, sulpho and carboxyl,

which compound is in free acid or water-soluble salt form.

4,237,285

PROCESS FOR THE PRODUCTION OF CONCENTRATED CYANURIC ACID SLURRIES

John A. Bartoszek, and Louis C. Hirdler, both of Lake Charles, La., assignors to Olin Corporation, New Haven, Conn.

Filed Jun. 6, 1979, Ser. No. 46,393
Int. Cl.[2] C07D *251/32*
U.S. Cl. 544—192 11 Claims

1. A process for the production of concentrated cyanuric acid slurries which comprises:

(a) feeding urea to a hot solvent to pyrolyze said urea to produce a reaction mixture comprised of solid particles of cyanuric acid in said solvent,

(b) agitating said reaction mixture at a first agitation rate during said pyrolysis to form a suspension of said solid particles of cyanuric acid in said solvent,

(c) reducing said first agitation rate to permit settling of said solid cyanuric acid particles from said suspension to form a concentrated lower slurry phase and an upper solvent phase, where said concentrated lower slurry phase comprises from about 40 to about 70 percent by weight of cyanuric acid, and

(d) separating said concentrated lower slurry phase from said upper solvent phase.

4,237,286

METAL COMPLEXES OF AZOMETHINES

François L'Eplattenier, Therwil; Andre Pugin, and Jost von der Crone, both of Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

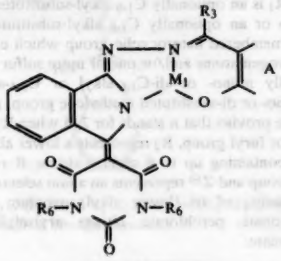
Division of Ser. No. 773,990, Mar. 3, 1977, Pat. No. 4,132,708, which is a division of Ser. No. 545,457, Jan. 30, 1975, Pat. No. 4,022,770. This application Oct. 26, 1978, Ser. No. 955,042

Claims priority, application Switzerland, Feb. 6, 1974, 1625/74

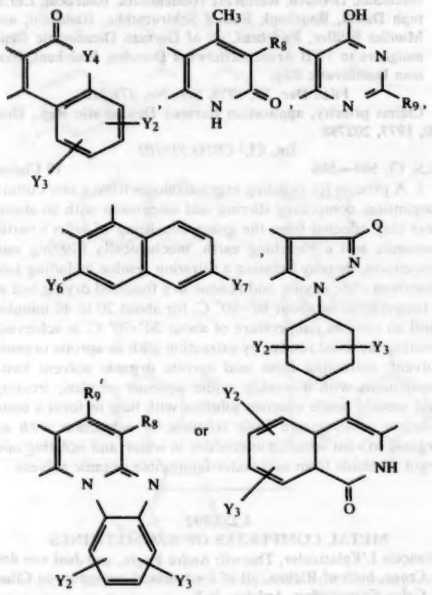
Int. Cl.[3] C07D *401/12, 403/14;* D06P *1/10*

U.S. Cl. 544—225 **2 Claims**

1. An azomethine metal complex of the formula



in which R_3 is alkyl of 1 to 4 carbon atoms; M_1 is Ni, Cu, or Zn; R_6 is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl, phenyl substituted by halogen, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms; A is a radical of the formulae



in which Q is methyl, alkoxycarbonyl with 2 to 5 carbon atoms or carbamoyl, R_8 is cyano, or carbamoyl; R_9 is hydrogen, or hydroxy, Y_2 and Y_3 are hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or nitro, Y_4 is oxygen, sulfur or —NH—; Y_6 is hydrogen, carboxy, carbamoyl, alkoxycarbamoyl of 2 to 6 carbon atoms, alkylcarbamoyl of 2 to 6 carbon atoms, phenylcarbamoyl, phenylcarbamoyl substituted in the phenyl moiety by halogen, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms; Y_7 is hydrogen, halogen, methoxy, nitro or cyano.

4,237,287

PROCESS FOR OBTAINING 4,5-DICHLORO-2-PHENYL-3(2H)-PYRIDAZINONE FROM 5-CHLORO-4-AMINO-2-PHENYL-3(2H)-PYRIDAZINONE

Raimondo Motta, Milan, Italy, assignor to Oxon Italia S.p.A., Milan, Italy

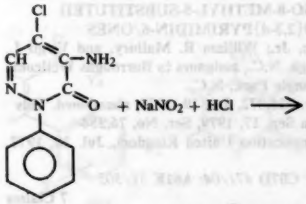
Filed Jul. 10, 1979, Ser. No. 56,399

Claims priority, application Italy, Jul. 28, 1978, 83624 A/78

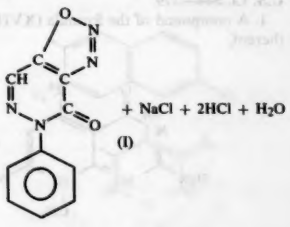
Int. Cl.[3] C07D *237/14, 237/22, 498/04*

U.S. Cl. 544—241 **3 Claims**

1. Process for obtaining 4,5-dichloro-2-phenyl-3(2H)-pyridazinone from 5-chloro-4-amino-2-phenyl-3(2H)-pyridazinone, characterized in that the 5-chloro-4-amino-2-phenyl-3(2H)-pyridazinone is diazotized in a first stage in accordance with the following reaction:

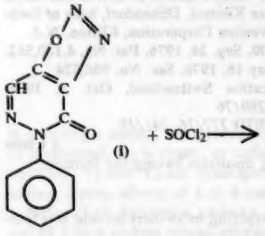


(I)



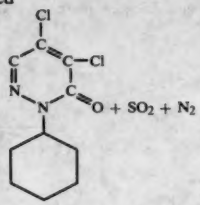
(I)

the compound (I) being obtained by dilution with water and filtration, and in that in a second stage the said compound (I) is reacted with thionyl chloride in accordance with the following reaction:



(I)

-continued



the 4,5-dichloro-2-phenyl-3(2H)-pyridazinone being obtained by dilution with water and filtration.

4,237,288

DECAFFEINATION OF FATTY MATERIALS

Dean F. Rushmore, Marysville, Ohio, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed May 17, 1979, Ser. No. 39,956

Int. Cl.[3] C07D *473/12*

U.S. Cl. 544—275 **4 Claims**

1. A process for the removal of caffeine from a solution of caffeine in a fatty medium which comprises contacting the solution with a hydrophilic, phenol/formaldehyde polymeric resin having phenolic functional groups and separating the resin from solution having a reduced caffeine content.

4,237,289

2,7-DIAMINO-8-METHYL-5-SUBSTITUTED PYRIDO{2,3-d}PYRIMIDIN-6/ONES

Robert W. Morrison, Jr.; William R. Mallory, and Virgil L. Styles, all of Raleigh, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

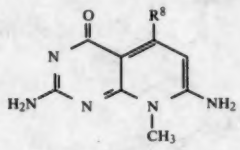
Division of Ser. No. 926,072, Jul. 19, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 76,354

Claims priority, application United Kingdom, Jul. 20, 1977, 30380/77

Int. Cl.[3] C07D *471/04;* A61K *31/505*

U.S. Cl. 544—279 **7 Claims**

1. A compound of the formula (XVII) or a tautomer or salt thereof,



(XVII)

wherein R^8 is lower alkyl, phenyl, phenyl substituted by one or more hydroxy or lower alkoxy, or pyridyl.

4,237,290

PROCESS FOR MAKING ASYMMETRICAL DISULFIDES

Paul Dubs, Zug, and Heiner Küntzel, Dübendorf, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 726,100, Sep. 24, 1976, Pat. No. 4,130,562. This application May 16, 1978, Ser. No. 906,524

Claims priority, application Switzerland, Oct. 1, 1975, 12728/75; Jul. 20, 1976, 9280/76

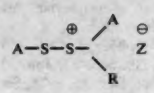
Int. Cl.[3] C07D *277/16, 241/18*

U.S. Cl. 544—335 **1 Claim**

1. A process for making disulfides having the formula:

$$R_1—(Y)_n—S—S—R_2$$

which process comprises reacting in an inert solvent at a temperature between −20° C. and 50° C. a sulfonium salt of the general formula:



(VII)

with the mercaptan of the general formula:

A—SH (VIII)

whereby in the one reaction component A represents a group $R_1(Y)_n$ and in the other reaction component A represents a group R_2; R_1 is an optionally C_{1-6} alkyl-substituted phenyl or furyl group or an optionally C_{1-6} alkyl-substituted, 5-membered or 6-membered heterocyclic group which contains one or more nitrogen atoms and/or one or more sulfur atoms; Y is an optionally mono- or di-C_{1-6}-alkyl or C_{2-6}-alkenyl-substituted mono- or di-substituted methylene group, n stands for 0–5 with the proviso that n stands for 2–5 when R_1 represents the phenyl or furyl group, R_2 represents a lower alkyl or alkenyl group containing up to 6 carbon atoms; R represents a C_{1-6}-alkyl group and $Z^{\ominus}$ represents an anion selected from the group consisting of tri (lower alkyl) oxonium salt, hexachloroantimonate, perchlorate, nitrate, arylsulphonate and alkyl sulphonate.

4,237,291

PROCESS FOR THE ISOLATION OF ERGOT ALKALOIDS FROM CULTURE SUSPENSIONS

Werner Grawert; Ludwig Schiedt, both of Radebeul; Brigitte Neumann, Dresden; Karlheinz Heidenbluth, Radebeul; Christoph Dauth, Radebeul; Rudolf Schirutschke, Radebeul, and Monika Müller, Radebeul, all of German Democratic Rep., assignors to VEB Arzneimittelwerk Dresden, Radebeul, German Democratic Rep.

Filed Dec. 20, 1978, Ser. No. 971,219

Claims priority, application German Democratic Rep., Dec. 20, 1977, 202798

Int. Cl.[3] C07D *519/02*

U.S. Cl. 544—346 **10 Claims**

1. A process for isolating ergot alkaloids from a raw culture suspension, comprising stirring said suspension with an absorbent clay selected from the group consisting of fuller's earth, bentonite and a bleaching earth; mechanically filtering said suspension, thereby isolating a filtration residue including said absorbent clay; drying said residue in a fluidized drying bed at a temperature of about 80°–90° C. for about 20 to 40 minutes until an exhaust temperature of about 50°–70° C. is achieved; treating the dried residue by extraction with an aprotic organic solvent; extracting from said aprotic organic solvent basic compounds with a weakly acidic aqueous solution; treating said weakly acidic aqueous solution with base to form a basic solution; treating said basic solution by extraction with an organic solvent which is immiscible in water; and isolating said ergot alkaloids from said water-immiscible organic solvent.

4,237,292

METAL COMPLEXES OF AZOMETHINES

François L'Eplattenier, Therwil; Andre Pugin, and Jost von der Crone, both of Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 773,990, Mar. 3, 1977, Pat. No. 4,132,708, which is a division of Ser. No. 545,457, Jan. 30, 1975, Pat. No. 4,022,770. This application Oct. 26, 1978, Ser. No. 955,038

Claims priority, application Switzerland, Feb. 6, 1974, 1625/74

Int. Cl.[3] C07D *401/12, 403/14;* D06P *1/10*

U.S. Cl. 546—7 **2 Claims**

1. An azomethine metal complex of the formula

4,237,293

METAL COMPLEXES OF AZOMETHINES

Francois L'Eplattenier, Therwil; Andre Pugin, and Jost von der Crone, both of Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

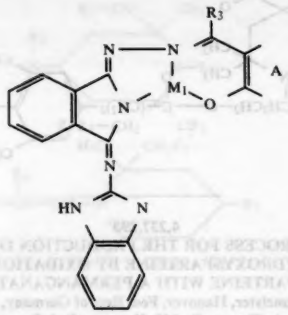
Division of Ser. No. 773,990, Mar. 3, 1977, Pat. No. 4,132,708, which is a division of Ser. No. 545,457, Jan. 30, 1975, Pat. No. 4,022,770. This application Oct. 26, 1978, Ser. No. 955,043

Claims priority, application Switzerland, Feb. 6, 1974, 1625/74

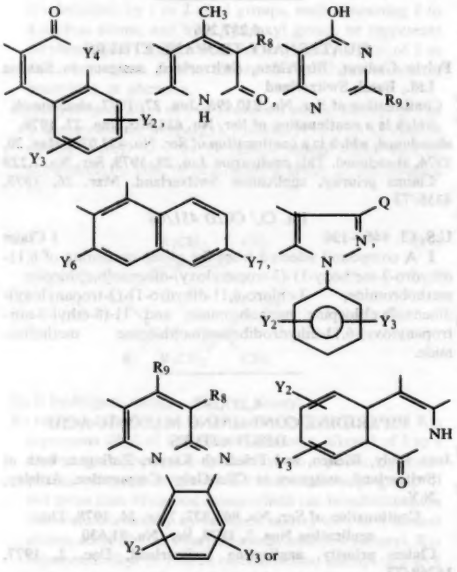
Int. Cl.[3] C07D *401/12, 403/14;* D06P *1/10*

U.S. Cl. 546—7 4 Claims

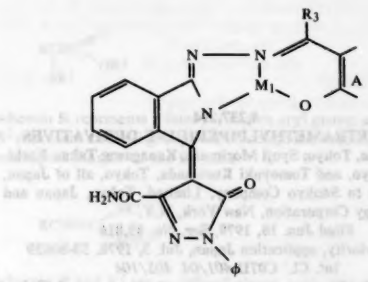
1. An azomethine metal complex of the formula



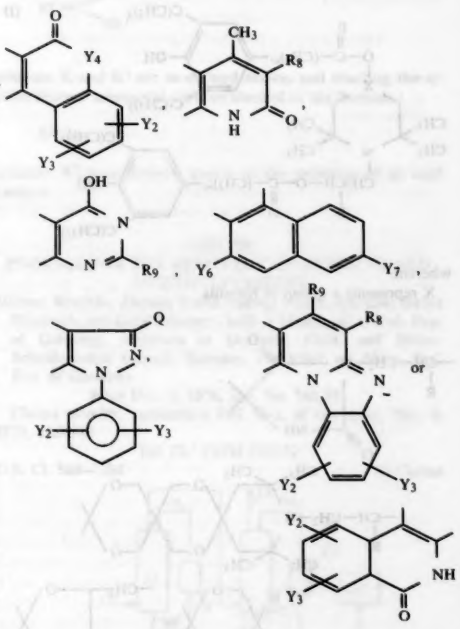
in which R_3 is alkyl of 1 to 4 carbon atoms, M_1 is Ni, Cu, or Zn; and A is a radical for the formulae



in which Q is methyl, alkoxycarbonyl with 2 to 5 carbon atoms or carbamoyl, R_8 is cyano, or carbamoyl, R_9 is hydrogen, or hydroxy, Y_2 and Y_3 are hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or nitro, Y_4 is —NH—, Y_6 is hydrogen, carboxy, carbamoyl, alkoxycarbamoyl of 2 to 6 carbon atoms, alkylcarbamoyl of 2 to 6 carbon atoms, phenylcarbamoyl, phenylcarbamoyl substituted in the phenyl moiety by halogen, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms, Y_7 is hydrogen, halogen, methoxy, nitro or cyano.



in which R_3 is alkyl of 1 to 4 carbon atoms, M_1 is Ni, Cu, Co or Zn, A is a radical for the formulae



in which Q is methyl, alkoxycarbonyl with 2 to 5 carbon atoms or carbamoyl, R_8 is cyano, or carbamoyl, R_9 is hydrogen, or hydroxy, Y_2 and Y_3 are hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or nitro, Y_4 is —NH—, Y_6 is hydrogen, carboxy, carbamoyl, alkoxycarbamoyl of 2 to 6 carbon atoms, alkylcarbamoyl of 2 to 6 carbon

atoms, phenylcarbamoyl, phenylcarbamoyl substituted in the phenyl moiety by halogen, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms, Y_7 is hydrogen, halogen, methoxy, nitro or cyano.

4,237,294

2,2,6,6-TETRAMETHYLPIPERIDINE DERIVATIVES

Nobuo Soma, Tokyo; Syoji Morimura, Kanagawa; Takao Yoshioka, Tokyo, and Tomoyuki Kurumada, Tokyo, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan and Ciba-Geigy Corporation, New York, N.Y.

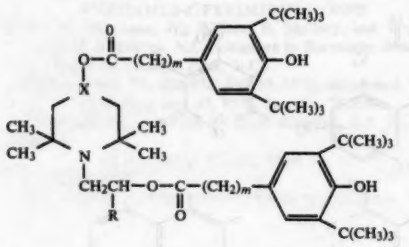
Filed Jun. 18, 1979, Ser. No. 49,816

Claims priority, application Japan, Jul. 3, 1978, 53-80639

Int. Cl.³ C07D *401/04, 405/104*

U.S. Cl. 546—20 **3 Claims**

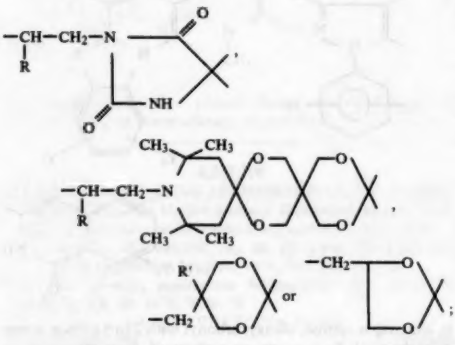
1. A 2,2,6,6-tetramethylpiperidine compound having the formula



(I)

wherein:

X represents a group of formula

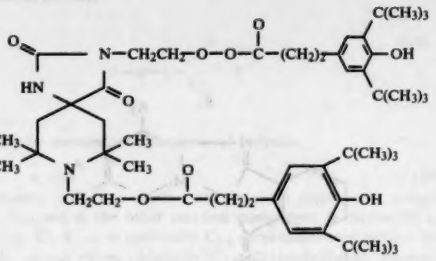


R represents a hydrogen atom;

represents an ethyl group; and

m represents 2.

2. A compound as claimed in claim 1 having the formula



4,237,295

PROCESS FOR THE PRODUCTION OF 17-HYDROXYSPARTEINE BY OXIDATION OF SPARTEINE WITH A PERMANGANATE

Bernd Hachmeister, Hanover, Fed. Rep. of Germany, assignor to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 1, 1979, Ser. No. 44,693

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825117

Int. Cl.³ C07D *471/22*

U.S. Cl. 546—63 **10 Claims**

1. A process for the production of 17-hydroxysparteine, comprising the step of oxidizing sparteine in an aqueous acid solution in the presence of a water soluble permanganate.

4,237,296

QUATERNARY TROPANE ETHERS

Fulvio Gadient, Birsfelden, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 810,496, Jun. 27, 1977, abandoned, which is a continuation of Ser. No. 652,808, Jan. 27, 1976, abandoned, which is a continuation of Ser. No. 452,978, Mar. 20, 1974, abandoned. This application Jan. 29, 1979, Ser. No. 7,229

Claims priority, application Switzerland, Mar. 26, 1973, 4335/73

Int. Cl.³ C07D *451/06*

U.S. Cl. 546—126 **1 Claim**

1. A compound selected from the group consisting of 6,11-dihydro-2-methoxy-11-(3-tropanyloxy)-dibenzo[b,e]thiepine methobromide; 2-chloro-6,11-dihydro-11-(3-tropanyloxy)-dibenzo[b,e]thiepine methobromide; and 11-(8-ethyl-3-nor-tropanyloxy)-6,11-dihydrodibenzo[b,e]thiepine methobromide.

4,237,297

PIPERIDINE CONTAINING MALONIC ACID DERIVATIVES

Jean Rody, Riehen, and Friedrich Karrer, Zofingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

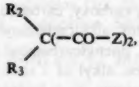
Continuation of Ser. No. 963,537, Nov. 24, 1978. This application Nov. 5, 1979, Ser. No. 91,630

Claims priority, application Switzerland, Dec. 2, 1977, 14769/77

Int. Cl.³ C07D *401/12*

U.S. Cl. 546—189 **5 Claims**

1. A compound of the formula I



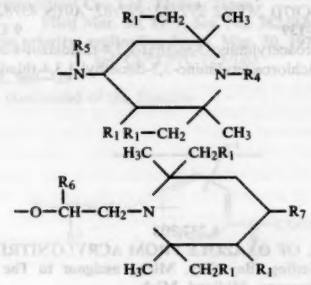
(I)

wherein

R_2 is C_1–C_{12}alkyl, C_3–C_4alkenyl, benzyl, or phenyl which is unsubstituted or substituted by C_1–C_8alkyl or C_1–C_8alkoxy, or is cyano,

R_3 is C_1–C_{12}alkyl, C_3–C_4alkenyl or benzyl, and

Z is a group of the formula II or III



(II)

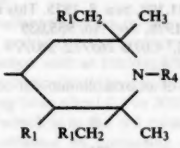
(III)

wherein

R_1 is hydrogen or C_1–C_4alkyl,

R_4 is hydrogen, O·, —OH, alkyl of 1 to 12 carbon atoms, alkenyl of 3 or 4 carbon atoms, propargyl, benzyl or a group of the formula —CH_2—CH(OR_9)—R_8, wherein R_8 is hydrogen, methyl, or phenyl, and $R_9$is hydrogen or a group A—CO—; or R_4 represents a group A—CO— and in both cases A represents alkyl of 1 to 18 carbon atoms, alkenyl of 2 or 3 carbon atoms, cyclohexyl, phenyl, benzyl, a phenyl, phenylmethyl or phenylethyl group which is substituted by 1 or 2 alkyl groups, each containing 1 to 4 carbon atoms, and by a hydroxyl group, or represents alkylamino of 1 to 12 carbon atoms, dialkylamino of 2 to 16 carbon atoms, anilino, alkoxy of 1 to 12 carbon atoms, benzyloxy or phenoxy,

R_5 is hydrogen, alkyl of 1 to 18 carbon atoms, alkenyl of 3 to 4 carbon atoms, propargyl, cycloalkyl of 5 to 12 carbon atoms, aralkyl of 7 to 14 carbon atoms which can be substituted by OH, or represents a group of the formula IV



(IV)

R_6 is hydrogen, methyl, ethyl or phenyl,

R_7 represents hydrogen, —OR_{10} or —$N(R_{11})(R_{12})$, and R_{10} represents alkyl of 1 to 18 carbon atoms, alkenyl of 3 to 4 carbon atoms, benzyl, 2-cyanoethyl, an aliphatic, cycloaliphatic, aromatic or araliphatic carboxylic acyl group of not more than 18 carbon atoms which can be substituted in the aromatic moiety by halogen, alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms and/or hydroxyl, R_{11} represents alkyl of 1 to 18 carbon atoms, alkenyl of 3 to 4 carbon atoms or phenylalkyl of 7 to 9 carbon atoms, and R_{12} has the same meaning as R_{11} or represents an aliphatic, cycloaliphatic, aromatic or araliphatic carboxylic acyl group of not more than 18 carbon atoms which can be substituted in the aromatic moiety by halogen, alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms and/or hydroxyl,

and the salts thereof.

5. Bis-[2-(2,2,6,6-tetramethyl-1-piperidinyl)-ethyl] dibenzylmalonate according to claim 1.

4,237,298

AROMATIC ACETIC ACID DERIVATIVES HAVING SULFUR ATOM AT ALPHA-POSITION AND PROCESS FOR THEIR PREPARATION

Genichi Tsuchihashi, Tama, and Katsuyuki Ogura, Sagamihara, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

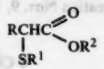
Division of Ser. No. 773,114, Feb. 28, 1977, Pat. No. 4,144,248. This application Dec. 5, 1978, Ser. No. 966,750

Claims priority, application Japan, Mar. 4, 1976, 51/22672; Mar. 4, 1976, 51/22673; Dec. 27, 1976, 51/156356

Int. Cl.³ C07D *333/24, 307/16, 295/14;* C07C *149/40*

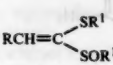
U.S. Cl. 546—238 7 Claims

4. A process for preparing an α-(alkylthio)acetic acid derivative of the formula



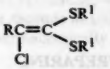
(IIIa)

wherein R represents a thienyl furyl or aryl group, and R^1 and R^2 represent an alkyl group, which comprises reacting a ketene mercaptal S-oxide of the formula



(I)

wherein R and R^1 are as defined above, with an acid chloride to form an α-chloroketene mercaptal of the formula



(II)

wherein R and R^1 are as defined above, and reacting the α-chloroketene mercaptal with an alcohol of the formula

R^2OH

wherein R^2 is as defined above, in the presence of an acid catalyst.

4,237,299

PROCESS FOR THE RECOVERY OF PYRIDINE AND 3-METHYLPYRIDINE

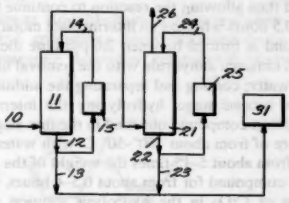
Helmut Beschke, Hanau; Franz-Ludwig Dahm, Alzenau; Heinz Friedrich, and Gerd Schreyer, both of Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 6, 1976, Ser. No. 748,041

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2554946

Int. Cl.³ C07D *213/12*

U.S. Cl. 546—250 10 Claims



1. In a process for recovering pyridine and 3-methylpyridine prepared by the catalytic reaction of acrolein or a mixture of

acetaldehyde and acrolein with ammonia at a temperature of at least 300° C. and then cooling the gas mixture formed and working up the condensate separated in the cooling the improvement comprising in a first step cooling the gaseous mixture from at least 300° C. to a temperature between 40° and 80° C. and then in a second cooling step cooling to a temperature of from 10° C. to below 40° C.

4,237,300

CERTAIN 6-SUBSTITUTED-2-PYRIDINAMINES

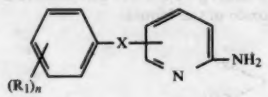
Richard J. Bochis, East Brunswick, and Peter Kulsa, Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 912,594, Jun. 5, 1978, Pat. No. 4,177,274, which is a division of Ser. No. 718,652, Aug. 26, 1976, Pat. No. 4,096,264, which is a continuation-in-part of Ser. No. 639,034, Dec. 9, 1975, abandoned. This application Nov. 9, 1979, Ser. No. 92,876

Int. Cl.³ C07D *213/02*

U.S. Cl. 546—297 **4 Claims**

1. A compound having the formula:



wherein

X is sulfur, sulfinyl or sulfonyl;

R_1 is trifluoromethyl; and

n is 0, 1 or 2.

4,237,301

TWO STAGE PROCESS FOR PREPARING 2,6-PYRIDIN-DICARBOXYLIC ACID

Giovanni Ghelli, Savona; Enrico Bruschi, and Gino Agnese, both of Genoa, all of Italy, assignors to Luigi Stoppani S.p.A., Milan, Italy

Filed Nov. 30, 1978, Ser. No. 965,037

Int. Cl.³ C07D *213/79*

U.S. Cl. 546—327 **9 Claims**

1. A two-stage process for preparing 2,6-pyridinedicarboxylic acid by oxidation of 2,6-dimethyl-pyridine, the process comprising the steps of:

in the first stage, providing a first reactant which is a solution of 2,6-dimethyl-pyridine in about 50–80% by weight sulphuric acid so that after oxidation from about 3–20 moles of free acid per mole of 2,6-pyridinedicarboxylic acid are formed; providing a second reactant which is a solution of a soluble salt of hexavalent chromium having a concentration based on CrO_3 of from about 40–65% by weight to provide from about a 10–100% stiochiometric excess; reacting the two reactants in a homogeneous phase at a temperature of from about 70°–115° C. by gradually introducing the two reactants into an initial reaction foot during an initial introduction time of from about 2–3 hours and then allowing the reaction to continue for from about 3–0.5 hours whereby an intermediate molar addition compound is formed between 2,6-pyridine dicarboxylic acid and chromic anhydride with the removal of one molecule of water; cooling and separating the addition compound;

in the second stage, hydrolyzing the intermediate molar addition compound obtained in the first stage at a temperature of from about 100°–50° C. with water in an amount of from about 5–15 times the weight of the dry intermediate compound for from about 0.5–4 hours, the concentration of CrO_3 in the hydrolysis solution not exceeding about 7% by weight; cooling to precipitate 2,6-pyridinedicarboxylic acid; and separating the precipitate from the hydrolysis solution.

4,237,302

DICHLOROACETYLIMINO HERBICIDE ANTAGONISTS AS PLANT PROTECTION AGENTS

Otto L. Hoffman, Shawnee, and Joel L. Kirkpatrick, Overland Park, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Sep. 29, 1978, Ser. No. 946,975

Int. Cl.³ C07D *285/12, 277/42, 277/82;* A01N *43/82*

U.S. Cl. 548—139 **9 Claims**

1. 2-Dichloroacetylimino-3-methyl-1,3,4-thiadiazol-4-ine.

3. 2-Dichloroacetylimino-3,5-dimethyl-1,3,4-thiadiazol-4-ine.

4,237,303

REMOVAL OF OXAZOLE FROM ACRYLONITRILE

Sterling C. Gatling, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 922,630, Jul. 5, 1978, abandoned. This application Apr. 30, 1979, Ser. No. 34,892

Int. Cl.³ C07D *263/32;* C07C *121/32*

U.S. Cl. 548—235 **15 Claims**

1. A process for removal of oxazole from oxazole-containing acrylonitrile comprising contacting the acrylonitrile with a cation exchange resin which resin prior to contact with the acrylonitrile, contains less than about 40 percent water based on the combined weight or resin and water and at least a portion of which resin is in the acid form.

4,237,304

OXAZOLINIUM SALTS AND METHOD OF PREPARATION

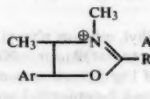
William Dowd; Richard C. Krauss, and Edward R. Freiter, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 611,109, Sep. 8, 1975. This application Oct. 26, 1978, Ser. No. 955,039

Int. Cl.³ C07D *263/12, 263/14*

U.S. Cl. 548—239 **7 Claims**

1. The threo isomer of an oxazolinium salt corresponding to the formula



in which R is a methyl or ethyl group, Ar is a phenyl or inertly-substituted phenyl wherein the inert substituent is selected from 1 to 4 carbon alkyl, methoxy and chloro group and $A^{\ominus}$ is an inert neutralizing anion of a strong inorganic protic acid.

4. A process for preparing a threo compound defined by claim **1** comprising the step of reacting by contacting an O,N-diacylated product of an erythro isomer of a 1-aryl-1-hydroxy-2-methylaminopropane with an anhydrous or substantially anhydrous strong inorganic protic acid wherein the diacyl groups are those from the acylating reagent group of ketene, acetic acid, propionic acid, butenoic acid, octanoic acid; acetyl chloride, propanoyl chloride, benzoyl chloride; acetic anhydride, propionic anhydride, benzoic anhydride, phthalic anhydride; and the methyl or ethyl ester of one of acetic acid, propionic acid, butyric acid and hexanoic acid.

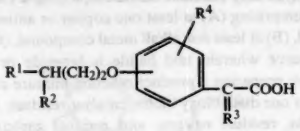
4,237,305

SUBSTITUTED PHENYLACETIC ACID COMPOUNDS AND PROCESS FOR PREPARATION THEREOF

Takashi Kamiya, Suita; Masashi Hashimoto, Toyonaka; Osamu Nakaguti, Nagaicho-Higashi; Teruo Oku, Osaka, and Hidekazu Takeno, Kita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 30, 1977, Ser. No. 782,968
Claims priority, application Japan, Mar. 30, 1976, 51/35600
Int. Cl.[3] C07C *125/065*
U.S. Cl. 560—29 7 Claims

1. A compound of the formula:



wherein

R^1 is an alkoxycarbonyl or, substituted or unsubstituted aralkoxycarbonyl,

R^2 is alkoxycarbonylamino,

R^3 is oxo, hydroxyimino or aroyloxyimino, and

R^4 is hydrogen or halogen.

4,237,306

THALLIUM(III) REAGENTS SUPPORTED ON MONTMORILLONITE CLAY MINERALS AND OXYTHALLATION PROCESSES FOR UTILIZING SAME

John F. White, Ridgewood; Edward C. Taylor, and Chih-Shu Chiang, both of Princeton, all of N.J., assignors to Emery Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 838,312, Sep. 30, 1977, Pat. No. 4,172,955, which is a division of Ser. No. 718,068, Aug. 26, 1976, Pat. No. 4,607,823. This application May 10, 1979, Ser. No. 38,030
Int. Cl.[3] C07C *9/76*
U.S. Cl. 560—105 4 Claims

1. In an oxythallation process for the oxidative rearrangement of an alkyl aryl ketone to the corresponding methyl aryl alkanoate by reaction with an electrophilic thallium (III) salt, the improvement comprising the use of a supported thallium reagent containing from about 0.5 to 50% by weight thallium at least 70% of which is in the +3 oxidation state, said supported reagent obtained by contacting a thallium (III) salt selected from the group consisting of thallium (III) trinitrate, thallium (III) sulfate, thallium (III) perchlorate, thallium (III) acetate, thallium (III) phosphate and thallium (III) trifluoroacetate with a montmorillonite clay mineral having a surface area greater than about 200 m^2/g in a mixture of methanol and trimethylorthoformate.

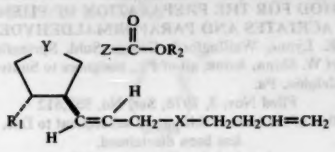
4,237,307

15-DEOXY-16-HYDROXY-16-METHYL-Δ19-PROSTAGLANDINS OF THE E AND F SERIES

Allan Wissner, Ardsley, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jun. 7, 1979, Ser. No. 46,727
Int. Cl.[3] C07C *177/00*
U.S. Cl. 560—121 5 Claims

1. An optically active compound of the formula:



wherein

Y is

X is

R_1 is selected from the group consisting of hydrogen and hydroxyl;

R_2 is selected from the group consisting of hydrogen and C_1 C_6 alkyl;

R_3 is methyl;

Z is selected from the group consisting of a divalent moiety of the formulae: $-(CH_2)_n-$, $-(CH_2)_mOCH_2-$ and $-(CH_2)_mSCH_2-$ wherein n is 5 to 7, and, m is 3 to 5 and the racemic mixture thereof; and when R_1 is hydrogen, the pharmaceutically acceptable salts thereof.

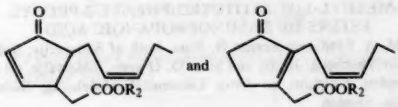
4,237,308

PROCESS FOR PREPARING 2-CYCLOPENTENONE DERIVATIVE AND PERFUME COMPOSITION CONTAINING THE DERIVATIVE

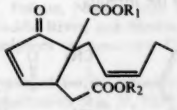
Sigeru Torii; Hideo Tanaka, and Yuichi Kobayashi, all of Okayama, Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Japan

Filed Jun. 8, 1978, Ser. No. 913,691
Claims priority, application Japan, Aug. 12, 1977, 52-97173
Int. Cl.[3] C07C *67/738*
U.S. Cl. 560—122 1 Claim

1. A process for preparing a mixture of 2-cyclopentenone derivatives represented by the formulae:



wherein R_2 is lower straight-chain or branched-chain alkyl, alkenyl or aralkyl, comprising decarboxylating 5-(cis-2-pentenyl)-2-cyclopentenone derivative represented by the formula:



wherein R_1 is branched-chain alkyl, and R_2 is as defined above in the presence of sodium chloride.

4,237,309

METHOD FOR THE PREPARATION OF PHENOLIC ACETATES AND PARAFORMALDEHYDE

James E. Lyons, Wallingford; George Suld, Springfield, and Robert W. Shinn, Aston, all of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Nov. 3, 1978, Ser. No. 957,612
The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.
Int. Cl.[3] C07C *67/39, 69/157*
U.S. Cl. 560—131 9 Claims

1. A process for the oxidation of methyl benzenes to form a phenolic acetate and formaldehyde or paraformaldehyde which comprises reacting said methyl benzene with air or oxygen and acetic anhydride in the presence of an acid catalyst and benzaldehyde, in amounts of from about 0.01–1.0 moles based on the methyl benzene, at temperatures of from about 80° C. to 150° C. and pressures of at least about 1 atmosphere, wherein the amount of acetic anhydride present is insufficient to form methylene diacetate, thereby selectively forming said phenolic acetate, together with free formaldehyde or paraformaldehyde, and wherein the flow rate of air or oxygen is sufficient to provide the continuous removal of said formaldehyde or paraformaldehyde as it is formed.

4,237,310

CO-OXIDATION OF METHYL BENZENES AND BENZALDEHYDE TO PHENOLICS AND FORMALDEHYDE

George Suld, Springfield; James E. Lyons, Wallingford, and Robert W. Shinn, Aston, all of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Nov. 3, 1978, Ser. No. 957,614
The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.
Int. Cl.[3] C07C *67/39, 69/157*
U.S. Cl. 560—131 9 Claims

1. A process for the oxidation of methyl benzenes under mild reaction conditions to form phenolic acetates and methylene diacetate which comprises contacting said methyl benzenes with air or oxygen, and acetic anhydride, in the presence of a strong acid catalyst and benzaldehyde at temperatures of from about 80° C. to 150° C. and pressures of at least 1 atmosphere, and recovering the phenolic acetate and methylene diacetate, said benzaldehyde being present in amounts of from about 0.01–1.0 mole based on the methyl benzene.

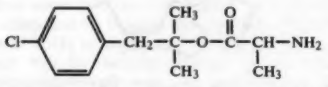
4,237,311

2-METHYL-1-(SUBSTITUTED)PHENYL-2-PROPYL ESTERS OF 2-AMINOPROPANOIC ACID

Ulf M. A. Lindberg; Svante B. Ross, both of Södertälje; Seth-Olov Thorberg, Järna, and Sven O. Ö gren, Södertälje, all of Sweden, assignors to Astra Läkemedel Aktiebolag, Södertälje, Sweden

Continuation of Ser. No. 757,484, Jan. 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 554,497, Mar. 3, 1975, abandoned. This application Aug. 10, 1978, Ser. No. 932,669
Claims priority, application Sweden, Mar. 11, 1974, 7403176
Int. Cl.[3] C07C *101/19;* A61K *31/22*
U.S. Cl. 560—173 5 Claims

1. A compound of the formula



or a pharmaceutically acceptable acid-addition salt thereof.

4,237,312

OXIDATION PROCESS INCLUDING RECOVERY AND RECYCLE OF CATALYST

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 2, 1979, Ser. No. 26,388
Int. Cl.[3] C07C *67/05*
U.S. Cl. 560—246 19 Claims

1. A process for the production of diacycloxy olefins which comprises:

(a) oxidizing at least one acyclic conjugated diolefin with molecular oxygen under oxidation reaction conditions in carboxylic acid reactant media employing a catalyst system comprising (A) at least one copper or antimony compound, (B) at least one alkali metal compound, (C) a halide ion-source wherein said halide is bromide or chloride, thereby preparing a product reaction mixture comprising at least one diacycloxy olefin, catalyst residues, unreacted diolefin, residual oxygen, and residual carboxylic acid media,

wherein said acyclic conjugated diolefin is selected from unsubstituted and substituted diolefins of 4 to 16 carbon atoms wherein the substituents are selected from the group consisting of halogen, cyano, —COOR′, and hydrocarbyl radicals, wherein R′ is hydrogen or an alkyl or aryl radical; and

said carboxylic acid media is selected from the group consisting of mono- and dicarboxylic aliphatic, cycloaliphatic, and aromatic acids, corresponding anhydrides, and mixtures, having 2 to 18 carbon atoms per molecule;

wherein said (A) where copper is selected from the group consisting of copper chlorides, bromides, oxides, carbonates, carboxylates, nitrates, orthophosphates, sulfates, and mixtures; and where antimony is selected from the group consisting of the chlorides, bromides, oxides, carboxylates, nitrates, sulfates, and mixtures;

said (B) is selected from the group consisting of the halides, nitrates, carboxylates, oxides, hydroxides, carbonates, orthophosphates, and sulfates, of lithium, sodium, potassium, rubidium, and cesium, and mixtures;

and said (C) halide-source is a said (A) or (B) where said (A) or (B) is the halide, alkaline earth metal halides, or diolefin;

(b) venting said product reaction mixture of any light unreacted components including residual oxygen, leaving a stripped reaction mixture,

(c) fractionating said stripped reaction mixture, thereby distilling off streams comprising said residual carboxylic acid media, and unreacted diolefin not vented, leaving a remaining reaction mixture comprising diacyloxy olefin product and catalyst residues,

(d) extracting said remaining reaction mixture with an effective amount of a solvent in which said diacyloxy olefin product exhibits a high degree of solubility, and said catalyst residues exhibit a low solubility, thereby forming an extract containing said diacyloxy olefin product, and a extraction residue containing said catalyst residues, wherein said solvent is normally liquid and consists of aliphatic halohydrocarbons or unsubstituted or alkyl-substituted aromatic solvents, or mixtures thereof,

(e) recycling said separated carboxylic acid media from said step (c) to said step (a),

(f) recycling extraction residue containing said catalyst residues to said step (a),

(g) separating said diacyloxy olefin product from said extract, leaving a recovered solvent, and

(h) recycling said recovered solvent to said step (d).

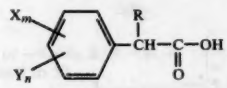
4,237,313

RACEMIZATION OF OPTICALLY ACTIVE α-SUBSTITUTED-α-PHENYLACETIC ACID DERIVATIVES

Akio Higo, Osaka, and Yukio Suzuki, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 30, 1979, Ser. No. 34,696
Claims priority, application Japan, Apr. 28, 1978, 53/52101
Int. Cl.[2] C07B 20/00
U.S. Cl. 562—401 8 Claims

1. A process for racemization of optically active phenylacetic acid derivatives, which comprises heating an optically active phenylacetic acid derivative of the general formula (I):



(I)

wherein X and Y, which may be the same or different, each represents a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group, a halogen-substituted lower alkyl group or a halogen-substituted lower alkoxy group, or X and Y may jointly form an alkylenedioxy group; m and n, which may be the same or different, each represents an integer of 1 to 5, and the sum of m and n does not exceed 5; and R represents an isopropyl group or a cyclopropyl group, to a temperature of at least 150° C. in the presence or absence of an inert solvent.

4,237,314

PHENYL ACETIC ACID PREPARATION

Ming N. Sheng, and Jar-Lin Kao, both of Cherry Hill, N.J., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 6, 1979, Ser. No. 73,050
Int. Cl.[3] C07C 57/30
U.S. Cl. 562—496 6 Claims

1. The method preparing phenyl acetic acid which consists of preparing a reaction mixture consisting essentially of benzene, acetic acid, and a catalyst system of the tellurium halide type, said catalyst system consisting essentially of the combination of a tellurium compound and halogen compound, the unit atom ratio of halogen to tellurium being within a range from about 3 to about 20 and causing molecular oxygen to react with said reaction mixture within a range from 100° C. to 200° C., and at an oxygen pressure within a range from 4 psig to 200 psig for from 2 to 72 hours to prepare phenyl acetic acid.

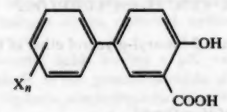
4,237,315

PREPARATION OF 5(HALOPHENYL)SALICYLIC ACID COMPOUNDS

Ulf H. Dolling, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 2, 1979, Ser. No. 90,792
Int. Cl.[3] C07C 65/00
U.S. Cl. 562—469 7 Claims

1. A method of preparing compounds of the formula:



(I.)

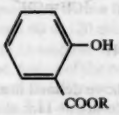
where

n is 1 or 2; and

X is chloro or fluoro comprising the steps of:

(a) combining, in the presence of a palladium catalyst system, and at a temperature of from 80° to 150° C. and a pressure of from atmospheric to 750 p.s.i.g., a halobenzene compound of the formula:

where X is chloro or fluoro and n is 1 or 2, with a salicylic acid ester of the formula:



where R is C_{1-4} alkyl;

wherein said palladium catalyst system comprises:

A. a catalyst portion comprising:

(1) palladium together with

(2) $C_{1-2}COO^-$ ligands and halo ligands selected from the group consisting of bromo, chloro, and fluoro, such that the molar weight percent, based on total ligand molar weight, of the $C_{1-2}COO^-$ ligands is from 30 to 60%; wherein the $C_{1-2}COO^-$ ligands are provided as palladium or alkali metal, acetate or propionate, and said halo ligands are provided as the appropriate halo salt of palladium, lithium, sodium, or tetra (alkyl) ammonium;

wherein the ratio of the total molor weight amount of the ligands to the molar weight amount of palladium utilized, is from 4:1 to 10:1; and

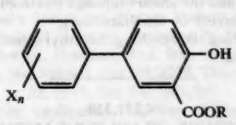
(3) from 10 to 100 parts of a reaction promoting acid, per part, on a molar basis, of palladium catalyst; and

B. a catalyst regeneration portion comprising:

(1) from 0.1 to 8.0 parts of phosphomolybdenovanadic acid per part, on a molar basis, of palladium catalyst; and

(2) at least 20 parts of a solubilizing agent selected from the group consisting of ethylene carbonate, propylene carbonate, and sulfolane, per part, on a molar basis, of palladium catalyst;

to give a compound of the formula:



(b) hydrolyzing the product of Step (a) to give the compound of Formula I.

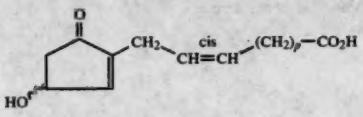
4,237,316

NOVEL 2-SUBSTITUTED-3,4-EPOXYCYCLOPENTAN-1-ONES, 2-SUBSTITUTED-3,4-EPOXYCYCLOPENTAN-1-OLS, AND VARIOUS 2-SUBSTITUTED-CYCLOPENTENONES

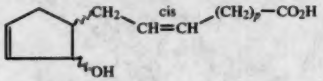
Karel F. Bernady, Somerville, N.J.; Middleton B. Floyd, Jr., Suffern; John F. Poletto, Nanuet, both of N.Y.; Robert E. Schaub, Upper Saddle River, and Martin J. Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 355,101, Apr. 27, 1973, abandoned. This application Sep. 25, 1975, Ser. No. 616,790
Int. Cl.[3] C07C 51/353
U.S. Cl. 562—503 1 Claim

1. The process of preparing compounds of the formula:



wherein p is an integer from 2 to 6, inclusive, which comprises isomerizing compounds of the formula:



wherein p is as hereinabove defined in an aqueous medium at a pH of from about 9.0 to about 11.5 at a temperature of from about 10° C. to about 50° C. for a period of time sufficient for a substantial degree of isomerization to take place.

4,237,317

PROCESS FOR PRODUCING SEBACIC ACID

Kazunori Yamataka; Yuuji Matsuoka, and Toshiro Isoya, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1978, Ser. No. 923,703

Claims priority, application Japan, Jul. 20, 1977, 52-86007; Jul. 20, 1977, 52-86008; Aug. 23, 1977, 52-100131; Dec. 2, 1977, 52-144673; May 24, 1978, 53-61122

Int. Cl.[2] C07C *51/00, 55/20*

U.S. Cl. 562—590 **36 Claims**

1. A process for producing sebacic acid from adipic acid which comprises:

half esterifying adipic acid with methanol to produce monomethyl adipate,

conducting electrolytic condensation of the monomethyl adipate in a methanol solution containing an alkali metal salt of monomethyl adipate to give an electrolytic solution containing dimethyl sebacate,

recovering dimethyl sebacate from the electrolytic solution by extracting the alkali metal salt of monomethyl adipate from the electrolytic solution with water after removal of the methanol by distillation and treating the electrolytic solution with an anion exchanger packed in a fixed bed to separate the monomethyl adipate therefrom, the water extraction and the anion exchange treatment being carried out successively or simultaneously,

and hydrolyzing the resulting dimethyl sebacate to produce sebacic acid.

4,237,318

MANUFACTURE OF AQUEOUS METHANOLIC SOLUTION OF SODIUM FORMATE

Werner Ostertag, Gruenstadt; Gerd Wunsch, Speyer; Volker Kiener, Weisenheim; Eckhard Hetzel, Frankenthal; Siegfried Schreiner, Ludwigshafen; Bernd Leutner, Frankenthal; Hans-Ulrich Schlimper, Speyer, and Erfried Voelkl, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 888,929, Mar. 22, 1978, abandoned. This application Jun. 5, 1979, Ser. No. 45,746

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, P2716032

Int. Cl.[3] C01B *17/66;* C07C *53/06*

U.S. Cl. 562—609 **3 Claims**

1. A process for the manufacture of an aqueous methanolic solution of sodium formate which solution can be used to produce anhydrous sodium dithionite which comprises: reacting carbon monoxide with an aqueous sodium hydroxide solution which contains based on the amount of water from 60 to 80% by weight of sodium hydroxide and from 10 to 40% by weight of methanol, at a temperature of from 80° to 120° C. under a pressure of from 10 to 40 bars.

4,237,319

PROCESS FOR LIQUID-PHASE OXIDATION OF M-DIISOPROPYLBENZENE

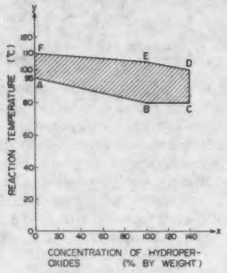
Hirohiko Nambu, Ohtake; Isao Hashimoto, Waki, and Ichiro Imai, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Oct. 24, 1978, Ser. No. 954,072

Claims priority, application Japan, Oct. 31, 1977, 52/129664

Int. Cl.[3] C07C *179/035, 177/047*

U.S. Cl. 568—571 **7 Claims**



1. In a process for producing m-diisopropylbenzene dihydroperoxide by oxidizing m-diisopropylbenzene in the liquid phase with molecular oxygen under alkaline conditions at a pressure of from atmospheric pressure to about 10 kg/cm^2; the improvement comprising carrying out the oxidation reaction at a reaction temperature y in the range of from 80° C. to 110° C. until the concentration x of hydroperoxides in the oxidation product, in percent by weight, calculated as m-diisopropylbenzene monohydroperoxide, reaches at least 120 but not more than 140, while maintaining the relationship between x and y within the shaded area ABCDEF shown in FIG. 1, and lowering the reaction temperature by at least about 3° C. from the initial reaction temperature (when x=0) when x becomes greater than 100.

4,237,320

1,3-BIS-ARYL-2-OXYALKYLATED-GLYCEROL ETHERS

Heinz Krapf, Grünstadt; Knut Oppenlaender, Ludwigshafen, and Guenter Uhl, Worms, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

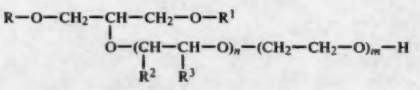
Filed Aug. 27, 1979, Ser. No. 69,920

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839463

Int. Cl.[3] C07C *43/164;* C09D *11/02*

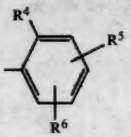
U.S. Cl. 568—609 **1 Claim**

1. An oxyalkylated 1,3-bis-aryl-glycerol ether of the formula



(I)

where R and R^1 are



α-naphthyl or β-naphthyl
and R^4, R^5 and R^6 are —H, C_1–C_{12}-alkyl or

R^2 is $—CH_3$ or $—C_2H_5$, R^3 is —H or $—CH_3$, n is from 0 to 10 and m is from 8 to 50.

4,237,321
2,4,5-TRICHLOROPHENOL PROCESS

Eric Cuthbertson, Newcastle upon Tyne, England, assignor to Sterling Drug Inc., New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 966,101

Claims priority, application United Kingdom, Dec. 6, 1977, 50773/77

Int. Cl.[2] C07C *39/32, 37/00*

U.S. Cl. 568—776 **9 Claims**

1. A method of making 2,4,5-trichlorophenol by chlorinating 2,5-dichlorophenol, characterized by reacting, at a temperature in the range from about −10° C. to about the reflux temperature of the reaction mixture, 2,5-dichlorophenol with about a stoichiometrically equivalent amount of chlorine in the presence of from about one to about five parts by weight of a liquid inert polar aprotic reaction medium having a dielectric constant from about 8 to about 35, and, when the reaction medium has a dielectric constant below 30, from about 0.5% to about 10% by weight of a Lewis acid catalyst based on the weight of the 2,5-dichlorophenol.

4,237,322
PROCESS FOR PREPARATION OF 1,5-DIMETHYLBICYCLO[3,2,1]OCTAN-8-OL

Albertus J. Mulder, and Aaldert J. de Jong, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 8, 1979, Ser. No. 37,195

Claims priority, application Netherlands, May 12, 1978, 7805142

Int. Cl.[3] C07C *35/24*

U.S. Cl. 568—820 **10 Claims**

1. A process for the preparation of 1,5-dimethylbicyclo-[3,2,1]octan-8-ol which comprises reacting 1,5-dimethyl-1,5-cyclooctadiene with a carboxylic acid of the general formula R—COOH selected from the class consisting of:

(a) carboxylic acids having a pK value below about 4 wherein R in the general formula above is hydrogen, a carboxyl group, or an aliphatic, cycloaliphatic or aromatic group of up to 8 carbon atoms substituted with one or more halogen atoms, carboxyl, hydroxyl, cyano or nitro groups and

(b) carboxylic acids having a pK value above about 4 wherein R in the general formula above is an unsubstituted aliphatic, cycloaliphatic or aromatic group of up to 8 carbon atoms; said reaction with carboxylic acids in subclass (b) being further carried out in the presence of an acid catalyst thereby forming an ester of 1,5-dimethylbicyclo[3,2,1]octan-8-ol and the carboxylic acid employed followed by hydrolysis or alcoholysis of the ester to yield 1,5-dimethylbicyclo[3,2,]1]octan-8-ol.

4,237,323
METHOD FOR PREPARING α-NAPHTHOL

Sakhib M. O. Aliev, ulitsa Barinova, 12, blok 4, kv. 31; Vagab S. Aliev, ulitsa Nizami, 66, blok 5, kv. 40; Novruz I. O. Guseinov, poselok N. Akhmedly 1730 proezd, 13, kv. 96; Vagif A. O. Nagiev, ulitsa Neftepererabotchikov, 170, kv. 181, and Nuri T. O. Sultanov, ulitsa Pushkina, 12/14, kv. 21, all of Baku, U.S.S.R.

Filed Jun. 8, 1979, Ser. No. 46,647

Int. Cl.[3] C07C *37/04*

U.S. Cl. 568—738 **8 Claims**

1. A method for preparing α-naphthol comprising sulphonation of naphthalene with an equimolar amount of concentrated sulphuric acid at a temperature within the range of from 30° to 85° C. for a period of from 60 to 120 minutes in the presence of acetic anhydride taken in an amount of from 0.5 to 1.5 mole per one mole of naphthalene, fusion of the resulting naphthalene-α-sulphonic acid with an alkali taken in an amount of 3–4 moles per mole of the naphthalene-α-sulphonic acid at a temperature of from 180° to 285° C. for 10 to 30 minutes, mixing the resulting melt consisting of an alkali metal α-naphtholate and an alkali metal sulphite with a polar solvent, acidification of the resulting mixture with a mineral acid taken in an equivalent amount relative to the amount of said alkali metal α-naphtholate, followed by isolation of α-naphthol from the resulting suspension.

4,237,324
PRODUCTION OF MONOGLYCOLS FROM ALKYLENE CARBONATES

Dale A. Raines, Wheatridge, Colo., and Oliver C. Ainsworth, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 22, 1979, Ser. No. 5,065

Int. Cl.[3] C07C *31/20*

U.S. Cl. 568—858 **4 Claims**

1. A process for the production of a monoglycol by hydrolyzing an alkylene carbonate which comprises reacting at least about stoichiometric amounts of water and an alkylene carbonate at a temperature of from about 80° C. to about 200° C., in the presence of alumina as catalyst.

4,237,325
METHOD OF CONDUCTING REACTIONS IN A TRICKLE-TYPE REACTOR

Günter Brandes, Hamburg; Johannes Wöllner, Kapellen Krs. Moers; Wilhelm Neier, and Werner Webers, both of, Orsoy, all of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 545,641, Jan. 30, 1975. This application Oct. 23, 1978, Ser. No. 953,507

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1974, 2404329

Int. Cl.[3] C07C *29/17*

U.S. Cl. 568—896 **10 Claims**

1. In a process for carrying out a hydration reaction between a gaseous olefin and water where in an on-stream period the reactants pass downwardly in contact with a fixed bed of particulate olefin hydration catalyst having an average particle size no greater than about 2 mm in a trickle-type reaction zone, the improvement which comprises prior to instituting the on-stream period removing air from said reaction zone by passing a gas devoid of free oxygen downwardly through said reaction zone and said catalyst bed, interrupting the flow of said gas devoid of free oxygen and flooding the reaction zone by introducing a liquid to flow upwardly through said catalyst bed and cover same and then removing said liquid from said reaction zone and substantially simultaneously introducing said gaseous olefin and water into said reaction zone to flow downwardly through said catalyst bed, under hydration conditions, thereby instituting the on-stream period.

4,237,326
METHOD OF INHIBITING POLYMERIZATION OF STYRENE

Nobuhiko Fuga, Tateno; Kunio Uchimura, Ami, and Hideyuki Takahashi, Yokkaichi, all of Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

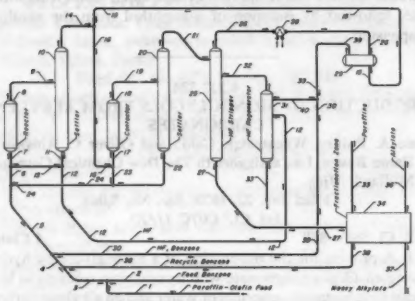
Filed May 30, 1979, Ser. No. 43,661
Int. Cl.[3] B01D 3/34; C10G 9/16; C07C 7/20, 15/46
U.S. Cl. 585—4 6 Claims

1. A method of inhibiting the polymerization of styrene, which comprises: mixing styrene with a minor, but effective proportion of an inhibitor selected from the group consisting of 2-methylbenzoquinone-4-oxime, 2,3,5-trimethylbenzoquinone-4-oxime, and mixtures thereof.

4,237,327
PROCESS FOR HF-CATALYZED ALKYLATION OF AROMATIC HYDROCARBONS

George R. Winter, III, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 9, 1979, Ser. No. 83,058
Int. Cl.[3] C07C 2/66
U.S. Cl. 585—450 3 Claims



1. In a process for the production of linear alkylaromatic hydrocarbons which comprises the steps of:

(a) contacting a liquid-phase feed stream comprising benzene and an aliphatic monoolefinic hydrocarbon having from 7 to 20 carbon atoms per molecule with liquid-phase HF within a reaction zone maintained at alkylation promoting conditions;

(b) separating an effluent removed from the reaction zone in a first settling zone maintained at quiescent conditions into a first hydrocarbon stream comprising benzene and a linear alkylaromatic hydrocarbon and a first liquid-phase HF stream;

(c) passing a portion of the first liquid-phase HF stream into an HF regeneration zone comprising a first fractionation column wherein high-boiling impurities are concentrated into a first bottoms stream and from which there is removed a first overhead vapor stream comprising HF and benzene;

(d) contacting the first hydrocarbon stream with liquid-phase HF in a contacting zone;

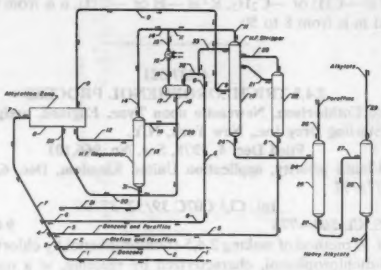
(e) separating an effluent removed from the contacting zone in a second settling zone maintained at quiescent conditions into a second hydrocarbon stream comprising benzene, the linear alkylaromatic hydrocarbon and dissolved HF and a second liquid-phase HF stream; and,

(f) passing the second hydrocarbon stream into a second fractionation column operated at conditions effective to separate the second hydrocarbon stream into a second overhead vapor stream comprising benzene and HF and a second bottoms stream comprising the linear alkylaromatic hydrocarbon; the improvement which comprises passing the first overhead vapor stream produced in the HF regeneration zone into the second fractionation column at an upper intermediate point.

4,237,328
PROCESS FOR HF-CATALYZED ALKYLATION OF AROMATIC HYDROCARBONS

George R. Winter, III, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 9, 1979, Ser. No. 83,135
Int. Cl.[3] C07C 2/66
U.S. Cl. 585—456 8 Claims



1. In a process for the production of linear alkylaromatic hydrocarbons which comprises the steps of:

(a) contacting a liquid-phase hydrocarbon mixture comprising benzene, an aliphatic monoolefinic hydrocarbon having from about 7 to 20 carbon atoms per molecule and a normal paraffinic hydrocarbon having the same number of carbon atoms per molecule as the aliphatic monoolefinic hydrocarbon with liquid-phase HF within an alkylation zone maintained at alkylation-promoting conditions;

(b) withdrawing from the alkylation zone a liquid-phase hydrocarbon stream comprising benzene, the normal paraffinic hydrocarbon, an alkylaromatic hydrocarbon and dissolved HF;

(c) passing the liquid-phase hydrocarbon stream into a first fractionation column from which there is removed a first overhead vapor stream comprising HF and benzene and a first bottoms stream comprising the alkylaromatic hydrocarbon and the normal paraffinic hydrocarbon; the improvement which comprises:

(i) passing the liquid-phase hydrocarbon stream into the first fractionation column at a first intermediate point;

(ii) removing a sidecut liquid stream comprising benzene, HF, and the normal paraffinic hydrocarbon from the first fractionation column at a higher second intermediate point and passing the sidecut liquid stream into a second fractionation column operated at conditions effective to produce a second overhead vapor stream which comprises benzene and HF and a second bottoms stream which comprises benzene and which has a normal paraffinic hydrocarbon concentration above 4.0 mole percent;

(iii) passing the second overhead vapor stream into the first fractionation column at a third intermediate point;

(iv) passing the second bottoms stream into the alkylation zone; and,

(v) passing the first bottoms stream into a fractionation zone in which the product alkylaromatic hydrocarbon is recovered.

4,237,329
PROCESS FOR THE PRODUCTION OF ALKYLBENZENES

Setsuo Kamiyama, Kawagoe; Yukio Nagashima, Ooi; Hiroshi Furukawa, Ooi, and Katsumi Kaneko, Ooi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 867,165, Jan. 5, 1978. This application Apr. 13, 1979, Ser. No. 29,629

Claims priority, application Japan, May 16, 1978, 53/57152

Int. Cl.³ C07C 5/22

U.S. Cl. 585—474 **9 Claims**

1. A process for the production of ethylbenzene, which comprises reacting benzene with a mixture of substantially C_9-C_{10} aromatic hydrocarbons comprising polymethylbenzene, and ethyltoluene and/or diethylbenzene, in the presence of an acid leached hydrogen form mordenite catalyst having a silica (SiO_2)/alumina (Al_2O_3) molar ratio of 15 to 21 and a sodium content of 0.05 weight % or less as Na_2O and in the presence of hydrogen.

4,237,330
ISOLATION OF BUTADIENE FROM A C₄-HYDROCARBON MIXTURE

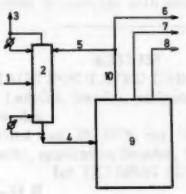
Alfred Lindner, Bobenheim-Roxheim; Klaus Volkamer, Frankenthal, and Ulrich Wagner, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 31, 1979, Ser. No. 44,029

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833195

Int. Cl.³ C07C 7/00

U.S. Cl. 585—807 **7 Claims**



1. A process for isolating butadiene by means of selective solvent from a C_4-hydrocarbon mixture which contains butadiene, small amounts of oxygen, hydrocarbons which are more soluble than butadiene in the selective solvent and hydrocarbons which are less soluble than butadiene in the selective solvent, which process comprises:

a. subjecting the C_4-hydrocarbon mixture to distillation in a distillation zone upstream of an extractive distillation zone, said C_4-hydrocarbon mixture being fed into the upstream distillation zone in a middle region extending from the middle of the distillation zone to the extent of about 80% into both the upper and lower halves of the upstream distillation zone,

b. obtaining as overhead product from the distillation zone a mixture of oxygen and C_4-hydrocarbons containing from 1 to 18 mole percent of oxygen,

c. taking off as bottom product a C_4-hyrocarbon mixture essentially free from oxygen,

d. subjecting the bottom product to extractive distillation using one extractive distillation zone or two successive extractive distillation zones, the same selective solvent being used in both, and

e. separating the bottom product by extractive distillation into a distillate containing the less soluble hydrocarbons, a stream of butadiene and a stream containing the more soluble hydrocarbons.

4,237,331
OLEFIN OXIDATION PROCESS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 895,339, Apr. 11, 1978. This application Oct. 26, 1979, Ser. No. 88,717

Int. Cl.³ C07C 7/152

U.S. Cl. 585—845 **10 Claims**

1. A process for separating isobutylene from a C_4 stream containing isobutylene and linear mono-olefins by selectively oxidizing the linear olefins to leave isobutylene which comprises contacting:

(a) said C_4 stream with

(b) oxygen in

(c) a reaction diluent comprising at least two liquid phases wherein at least one liquid phase is an aqueous phase, and in the presence of

(d) a catalyst comprising a palladium component, a copper component, and a boron-containing material that provides a catalytically active boric acid under the conditions employed in the reaction, and

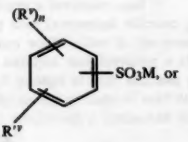
(e) a surfactant selected from the group of:

(1) quaternary ammonium salts of the general formula $(R''')_4N^+X^-$,

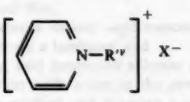
(2) alkali metal alkyl sulfates of the general formula $R''O\text{-}SO_3M$,

(3) alkali metal salts of alkanoic acids of the general formula $R''CO_2M$,

(4) alkali metal salts of alkaryl sulfonic acids of the general formula



(5) 1-alkyl pyridinium salts of the general formula



wherein R''' is an alkyl radical of from 1 to 20 carbon atoms and wherein the total number of carbon atoms in said quaternary ammonium salt is from about 8 to about 30 carbon atoms; X^- is selected from the group consisting of Br^-, Cl^-, I^-, F^-, $R'''CO_2^-$, QSO_3^-, BF_4^-, HSO_4^-, wherein Q is an aryl or alkaryl radical of 6 to 10 carbon atoms; R'' is an alkyl radical of from 10 to about 20 carbon atoms; M is an alkali metal; R' is an alkyl radical of 1 to 4 carbon atoms and wherein n is 0 or an integer of from 1 to 4,

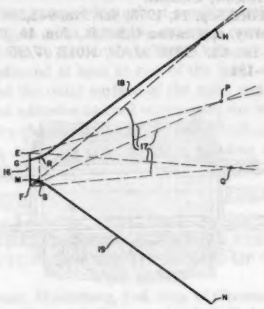
under oxidation conditions sufficient to oxidize the linear monoolefins of (a) to carbonyl compounds, and then

separating the oxidation products resulting from the oxidation of the linear mono-olefins from the unreacted isobutylene.

4,237,332
NONIMAGING RADIANT ENERGY DIRECTION DEVICE

Roland Winston, Chicago, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 26, 1978, Ser. No. 945,923
Int. Cl.[3] H01L *31/04;* G02B *5/10*
U.S. Cl. 136—259 14 Claims

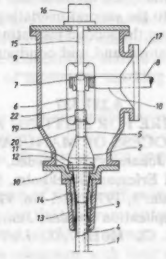


1. A device for directing and transducing energy comprising: an energy transducer, a first reflective wall of a particular contour, which contour coincides with nonlinear lines of flow of geometrical vector flux of a virtual radiant energy emitter of finite dimension radiating according to Lambert's law within a restricted angle not greater than 90 degrees were said virtual emitter positioned to coincide with said transducer.

4,237,333
HIGH VOLTAGE INSULATED CABLE TERMINATIONS

Ake Classon, Ludvika, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Aug. 28, 1978, Ser. No. 937,590
Claims priority, application Sweden, Sep. 2, 1977, 7709880
Int. Cl.[3] H02G *15/24*
U.S. Cl. 174—21 R 15 Claims



1. Cable termination apparatus for connecting at least one high voltage cable to at least one pressure-gas-insulated conductor, comprising:

a cable conductor surrounded by a cable insulation of solid insulating material;

a metal enclosure filled with pressure gas and receiving an end of said cable conductor;

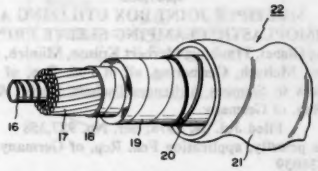
a contact socket fixed to the end of said cable conductor for interconnecting the high voltage cable and the pressure-gas-insulated conductor;

a pull rod oriented substantially along the axial extension of said end of the high voltage cable, one end of said pull rod being fixed in relation to said metal enclosure, the other end of said pull rod being fixed to said contact socket.

4,237,334
LAMINATED INSULATING PAPER AND OIL-FILLED CABLE INSULATED THEREBY

Takeshi Kojima, Chigasaki; Sakae Kinoshita, Yamato, and Kenzo Takeuchi, Tokyo, all of Japan, assignors to Showa Electric Wire & Cable Co., Ltd., Kanagawa, Japan

Filed Jul. 31, 1978, Ser. No. 929,370
Claims priority, application Japan, Aug. 6, 1977, 52-94385; Nov. 7, 1977, 52-133291; Mar. 1, 1978, 53-23185
Int. Cl.[3] H01B *9/06;* B32B *9/04, 15/08*
U.S. Cl. 174—25 R 12 Claims



1. A laminated electrical insulating wrapping material comprising a plastic film of a cross-linked silicone grafted polyolefin and a cellulose paper or papers laminated to at least one side of said film, said laminated insulating material produced by the process comprising:

(a) melt-extruding an un-cross-linked silicone grafted polyolefin to form a softened film;

(b) superimposing said paper or papers onto one side of said softened film;

(c) applying pressure to said superimposed paper and softened film to form a laminate; and

(d) cross-linking said laminated silicone grafted polyolefin film by reaction with water in the presence of a silanol condensation catalyst and forming a chemical bond between the silyl groups of said silicone grafted polyolefin film and the hydroxyl groups of said cellulose paper.

4. A process for producing a laminated electrical insulating material comprising:

(a) melt-extruding an un-cross-linked silicone grafted polyolefin to form a softened film;

(b) superimposing a cellulose paper or papers onto one side of said softened film;

(c) applying pressure to said superimposed paper and softened film to form a laminate; and

(d) cross-linking said laminated silicone grafted polyolefin film by reaction with water in the presence of a silanol condensation catalyst and forming a chemical bond between the silyl groups of said silicone grafted polyolefin film and the hydroxyl groups of said cellulose paper.

8. In an oil-filled electrical cable comprising an electric conductor, an insulating layer of wound laminated insulating paper applied over the electric conductor, an insulating oil impregnated in the insulating layer, and a metal sheath applied over the insulating layer, the improvement wherein:

the laminated insulating paper comprises a plastic film formed of a cross-linked silicone grafted polyolefin film and cellulosic paper or papers laminated to at least one side thereof and produced by the process comprising,

(a) melt-extruding an un-cross-linked silicone grafted polyolefin to form a softened film;

(b) superimposing said paper or papers onto one side of said softened film;

(c) applying pressure to said superimposed paper and softened film to form a laminate; and

(d) cross-linking said laminated silicone grafted polyolefin film by reaction with water in the presence of a silanol condensation catalyst and forming a chemical bond

between the silyl groups of said silicone grafted polyolefin film and the hydroxyl groups of said cellulose paper.

4,237,335

MULTIPLE JOINT BOX UTILIZING A THERMOPLASTIC CLAMPING SLEEVE PRINCIPLE

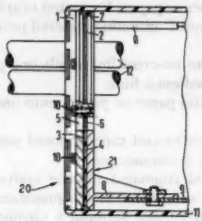
Wolfgang Giebel, Traubing; Herbert Krause, Munich, and Hans-Juergen Meltsch, Germering, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

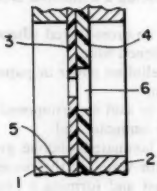
Filed Jul. 24, 1978, Ser. No. 927,358

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1977, 2736039

Int. Cl.[3] H02G *15/013*

U.S. Cl. 174—92 4 Claims





1. A distribution sleeve which has a tubular sleeve having a longitudinal slit with wedge-shaped sealing elements along the slit and sealing members at both ends of the tubular sleeve, the improvements comprising each of the sealing members being a separate unit comprising a pair of rigid disks, at least two elastic circular plates, and means for interconnecting the disks together with the plates being interposed and clamped therebetween, each of said plates having a different thickness, said disks and plates each having a plurality of apertures aligned with each other to form a plurality of cable inlets with each of the apertures of the elastic circular plates of a cable inlet having a smaller diameter than the apertures of the rigid disks for the same inlet, the apertures in one of said elastic plates being smaller than the apertures in the other elastic plate, and each of said disks being provided with a peripheral bevel coacting to form a circular groove, and means for forming a peripheral seal between the sealing member and the tubular sleeve being received in said groove.

4,237,336

DEVICE FOR PASSING ELECTRICAL AND POWER INSTALLATION CONDUCTORS THROUGH PROTECTIVE SHELL SEPARATING CLEAN ZONE FROM CONTAMINATED ONE AND METHOD OF ASSEMBLING SAME

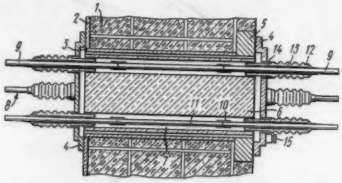
Nikolai S. Kostjukov, Profsojuznaya ulitsa, 93, korpus 1, kv. 115; Nikolai V. Minakov, 9 ulitsa Sokolinoi gory, 7, kv. 100, and Vladimir A. Knyazev, Reutovskaya ulitsa, 8, korpus 3, kv. 41, all of Moscow, U.S.S.R.

Filed Sep. 14, 1978, Ser. No. 942,318

Claims priority, application U.S.S.R., Jan. 16, 1978, 2561803

Int. Cl.[2] G21C *13/04;* H01B *17/30*

U.S. Cl. 174—151 8 Claims



1. A device for passing electrical and power installation conductors through a protective shell separating a clean zone from a contaminated one, comprising:

a metal shield attached to said protective shell on the contaminated zone side;

a hollow metal casing made in the form of a tube embedded in the body of said protective shell;

end flanges of said hollow metal casing;

a first insulating through element arranged within said hollow metal casing made of inorganic material having a high absorption capacity to induced radiation and having at least one through hole;

a conductor passed through said hole and having one end in said clean zone and one end in said contaminated zone;

at least one section of said conductor in the form of a rod on the contaminated zone side;

a thermocompensating multi-strand section of said conductor coupled electrically to said section of the conductor made of a rod;

a second insulating through element formed of inorganic insulating material fitted on each said conductor end;

seal fittings fixed to the second insulating through elements and rigidly linking the second insulating through elements with said end flanges and said conductor ends.

4,237,337

CABLE WITH WIRE FOR SLITTING A PROTECTIVE SHEATH AND PROCESS OF MANUFACTURING SAME

Hans R. Serrander, Johanneshov, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jun. 1, 1978, Ser. No. 911,489

Claims priority, application Sweden, Jun. 9, 1977, 7706752

Int. Cl.[3] H01B *7/00, 13/14*

U.S. Cl. 174—70 R 8 Claims

1. A cable comprising a core having at least one individually

insulated conductor, an outer sheathing on said core, a wire for tearing the outer sheathing, said wire being interposed between the inner surface of the sheathing and the outer surface of the core, and an adhesive means joining said wire to at least one of said surfaces; the sheathing being substantially uniform in thickness throughout its extent inclusive of the location of said wire.

6. A process of manufacturing a cable comprising mounting a tear wire on a core having at least one individually insulated conductor therein, applying a heat-sensitive adhesive to said wire, applying an outer sheathing onto said core and wire in a heated condition to render the adhesive adherent to cause the wire to be adhered at least to one of the inner surface of the sheathing and the outer surface of the core, and allowing the sheathing and adhesive to cool whereupon the wire is bonded in the cable by the adhesive, and the cooled adhesive no longer has adhesive capability apart from the bonding of the wire in the cable.

4,237,338

COORDINATED COMMUNICATION SYSTEM FOR TRANSMITTING DATA AND METHOD OF OPERATING THE SAME

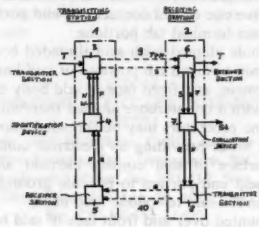
Siegfried Hecht, Heidelberg, Fed. Rep. of Germany, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Mar. 15, 1979, Ser. No. 20,826

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812668

Int. Cl.³ G08C *25/00*; H04L *25/02*

U.S. Cl. 178—23 A **4 Claims**



1. A method of transmitting telegrams between a transmitting station and a receiving station, each having a transmitter section and a receiver section, comprising the steps of:

providing at the transmitting station an identification device having a list of names for marking the transmitted telegrams;

providing at the receiving station an evaluation device having knowledge of the list of names and their sequence for detecting and identifying such names in the transmitted telegrams;

applying by means of the identification device of the transmitting station to the telegrams to be transmitted a respective name from said list of names;

transmitting the telegrams with their names from the transmitting station to the receiving station;

detecting by means of the evaluation device in the receiving station the names and their sequence in the incoming telegrams;

requesting, upon reception at the receiving station of a telegram which is garbled or lost, by means of the receiving station, and while identifying the name of the garbled or lost telegram, the transmitting station to again transmit such telegram; and

controlling the receiving station, by means of said evaluation device, such that telegrams which have been properly received in the interim are not evaluated until the arrival of the previously lost or garbled telegram.

4,237,339

AUDIO TELECONFERENCING

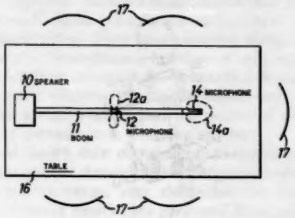
John G. Bunting, Ipswich; Robin C. Cross, Felixstowe; David R. Guard; Ian S. Groves, both of Ipswich; Edward G. T. Johnson, Woodbridge, and Alan E. Stevens, Ipswich, all of England, assignors to The Post Office, London, England

Filed Oct. 18, 1978, Ser. No. 953,280

Claims priority, application United Kingdom, Nov. 3, 1977, 45775/77

Int. Cl.³ H04M *1/20*; H04R *3/02*

U.S. Cl. 179—1 CN **19 Claims**



1. An electro-acoustic terminal unit for use in an audio teleconferencing system comprising:

an electro-acoustic transducer,

one or more acousto-electric transducers, each having a sensitivity which is directionally dependent and exhibits at least one null or substantially null position, the acousto-electric transducer or transducers being horizontally separated from and so located and orientated relative to the electro-acoustic transducer that the null position is directed towards the electro-acoustic transducer, and a means for rigidly mounting said transducers to provide said horizontal separation.

4,237,340

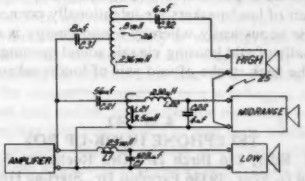
CROSSOVER NETWORK FOR OPTIMIZING EFFICIENCY AND IMPROVING RESPONSE OF LOUDSPEAKER SYSTEM

Paul W. Klipsch, Hope, Ark., assignor to Klipsch and Associates, Inc., Hope, Ark.

Division of Ser. No. 802,734, Jun. 2, 1977, Pat. No. 4,138,594. This application Oct. 5, 1978, Ser. No. 948,976

Int. Cl.² H04R *3/14, 3/04*

U.S. Cl. 179—1 D **5 Claims**



1. In a loudspeaker system having low, midrange, and high frequency loudspeakers and an LC crossover network, wherein at least one of said loudspeakers is less efficient than other of said loudspeakers, the improvement in said LC crossover network, comprising:

an autotransformer included in said LC crossover network and connected between an amplifier and said at least one less efficient loudspeaker for boosting the audio frequency input to said at least one less efficient loudspeaker,

whereby the output of said at least one less efficient loudspeaker is increased to enable use of said at least one less efficient loudspeaker with said other loudspeakers and

whereby the overall loudspeaker system operates at optimum efficiency.

4,237,341

PORTABLE SELF-CONTAINED AMPLIFIER AND LOUDSPEAKER APPARATUS

Paul E. Richards, 12908 Piccadilly Cir. #2, Shawnee Mission, Kans. 66215

Filed Sep. 25, 1978, Ser. No. 945,640
Int. Cl.³ H04R *27/04*
U.S. Cl. 179—1 MG **15 Claims**

1. An amplifier and loudspeaker apparatus adapted to be carried on the body of a person using a sound source generating electrical signals comprising the combination of:

a housing having an internal sound chamber occupied by an air column;

a pair of loudspeaker units secured to said housing in fixed spaced apart relationship, each of said loudspeaker units facing in opposite directions so that said air column moves in unison with said loudspeakers;

said housing having a sound opening midway between said loudspeakers for radiating acoustical energy via said air column;

an electronic component package including electrical amplification components secured to said housing within said internal sound chamber and disposed between said loudpseaker units; and

means operably connecting said electrical amplification components to said sound source and to said loudspeaker units for energizing said loudspeaker units and moving said air column so as to generate acoustical energy in a predetermined propagation pattern from said housing opening and from said loudspeaker units in response to amplified sound source electrical signals;

said pair of loudspeakers are intentionally connected out-of-phase acoustically whereby sound energy is radiated externally of said housing via said sound opening in response to the back stroke of said pair of loudspeakers.

4,237,342

TELEPHONE HOOK-UP BOX

Harry J. Eller, 216 Birch Hill Dr., Rochester, Mich. 48063; Donald G. Eller, 39336 Farmhill Dr., Sterling Heights, Mich. 48078; Edward R. Dudek, 31465 Beechwood, Warren, Mich. 48093, and Edward C. Goodwin, 1161 Devonshire, Grosse Pointe Park, Mich. 48230

Filed Jun. 4, 1979, Ser. No. 44,892
Int. Cl.³ H04M *1/18*
U.S. Cl. 179—1 PC **10 Claims**

1. A telephone hook-up box comprising:

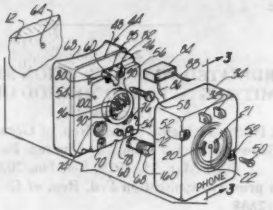
a molded body element;

a pair of strip metal line contact-terminal elements and a strip metal ground contact-terminal element, each of said line and ground contact-terminal elements being molded within said body element and each including integrally formed pairs of spring fingers comprising contact sets extending into a bore formed in said body element, said spring fingers being formed along side an intermediate section of each of said contact terminal elements;

each contact-terminal element further including a terminal tab portion extending into an opening formed in said front face of said body element to enable an electrical connection to be made therewith adjacent said front face of said body element;

said ground contact-terminal element further including a transverse section having opposite ends forming contact seats, said transverse section offset away from said front face of said body element and including an integral offsetting portion intermediate said front face of said body element to offset said transverse section and said contact seat ends from said line terminal tab portions, each of said opposite ends extending beneath a respective one of said line contact-terminal element terminal tab portions;

a pair of threaded bores extending into said body element



away from said body element front face into registry with a respective one of said contact seat end portions and said line contact-terminal tab portions;

a circular hole aligned with said threaded bore formed in each of said terminal tab portions of said line contact-terminal element, said front face of said body element being formed with a counterbore aligned therewith;

whereby line protectors may be threaded into said molded threaded bores providing an electrical contact with the upper surface of said contact element and with said contact seat end portion to provide grounding overload protection for said telephone load lines;

a cover mounted over said front face of said body element, said cover being formed with a pair of arcuate opening slots and a central opening therebetween, said arcuate slots being aligned with respective one of each of said line contact-terminal element contact sets, said central opening aligned with said intermediate ground contact set.

4,237,343

DIGITAL DELAY/AMBIENCE PROCESSOR

Stephen L. Kurtin, 3835 Kingswood Rd., Sherman Oaks, Calif. 91403, and Edward C. Kelm, 1136 Wellington Ave., Pasadena, Calif. 91103

Filed Feb. 9, 1978, Ser. No. 876,540
Int. Cl.³ H04R *5/00;* **H04H** *7/00*
U.S. Cl. 179—1 J **26 Claims**

1. A signal processor which comprises:

(a) means for coupling a pair of analog input signals to the inputs of a corresponding pair of channels:

(b) means for converting analog signals coupled to the input of each of said channels into digital form;

(c) random access memory means for storing each of said digital signals at a different one of a plurality of addresses;

(d) means for retrieving said stored signals from said memory at said addresses after predetermined periods of time, said periods of time not being the same for all channels;

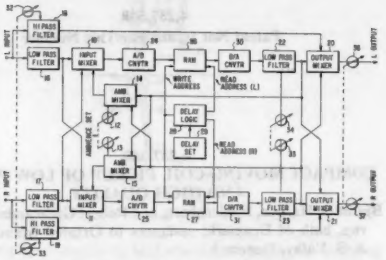
(e) means for generating said addresses for storing and retrieving said digitized signals in said memory which comprises:

(i) a stack in a loop circuit comprised of a counter and a plurality of registers, each of said registers being coupled

to the next higher register in said stack, the highest register in said stack being coupled to said counter, said counter being coupled to the lowest register in said stack;

(ii) pulsing means for advancing said counter; and

(iii) means for coupling a transfer pulse to each of said registers and said counter after said counter has advanced a predetermined number of counts, said transfer pulse causing said information in said stack and loop circuit to recirculate;



(f) means for converting said stored signals retrieved from said memory into analog amplitudes;

(g) means for coupling amplitudes proportional to said analog amplitudes derived from signals coupled to the input of each of said channels to the input of the corresponding channel; and

(h) means for coupling amplitudes proportional to said analog amplitudes derived from signals coupled to the input of at least one of said channels to the input of the other of said channels.

4,237,344

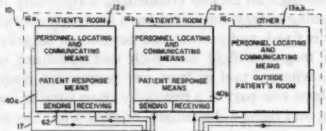
RAPID RESPONSE HEALTH CARE COMMUNICATIONS SYSTEM

John R. Moore, San Francisco, Calif., assignor to Hospital Communication Systems, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 851,412, Nov. 14, 1977, abandoned. This application Apr. 20, 1979, Ser. No. 31,924

Int. Cl.³ H04M *11/00*

U.S. Cl. 179—2 A **14 Claims**



1. A rapid-response health care communication system for a health care facility having a plurality of rooms for patient care comprising:

a central health-care console adapted for use by a health care coordinator, said console having a plurality of personnel location display means for displaying the location of various types of health care personnel in the facility;

a personnel location designating means at a plurality of preselected locations in the health care facility including said patient rooms connected to said personnel location display means, each of said designation means including a plurality of designator switches, each of said designator switches corresponding to one of a plurality of types of health care personnel, said designator switches selectively operable by the health care personnel at each location to cause a corresponding one of said personnel location display means to provide an indication to the health care coordinator of the type of health care personnel at each of said location designation means;

coordinator/personnel intercommunications-means extending between said central console and each location; said coordinator personnel intercommunication means having a coordinator communication-interface at said central console and a personnel communication-interface at said locations whereby the coordinator and personnel at a selected location may communicate with one another; and

coordinator/patient intercommunication-means extending between said central console and each patient room, aid coordinator/patient intercommunication-means having a coordinator communication-interface at said central console and a patient communication-interface at each of said patient rooms whereby the hospital health care coordinator at the central console and the patient at the patient room may communicate with one another;

whereby the health care coordinator, in response to a request by a patient through the coordinator/patient intercommunication-means, may determine the location of selected types of health care personnel from said display means, communicate with selected ones of the health care personnel through the coordinator/personnel intercommunicationmeans, and direct the selected health care personnel to the patient room location.

4,237,345

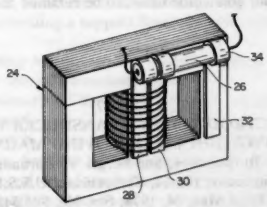
TRANSFORMER WITH INTEGRAL REED CONTACT

Berton E. Dotter Jr., Belmont, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Jan. 15, 1979, Ser. No. 3,280

Int. Cl.³ H01H *51/00*; H04M *3/22*

U.S. Cl. 179—16 E **4 Claims**



1. In a telephone system including a transmission line and a transmitter receiver, a circuit for detecting dial pulses comprising a transformer having a plurality of windings and a core on which said windings are mounted and magnetically coupled, means connecting the transmission line to a winding, means connecting the transmitter receiver to a winding, a magnetically operated reed switch, and means for mounting and magnetically coupling said reed switch to said core whereby said reed switch operably responds to said dial pulses, said means for mounting and magnetically coupling said reed switch comprising a plurality of planar strips of magnetic material, said planar strips being adjustably positioned in juxtaposition with said core for variably coupling magnetic flux from said core to said reed switch, each of said strips including a rolled end portion for supportably receiving said reed switch.

4,237,346

BRIDGE LIFTER MODULE

Paul V. De Luca, and Michael C. Fasano, both of Port Washington, N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

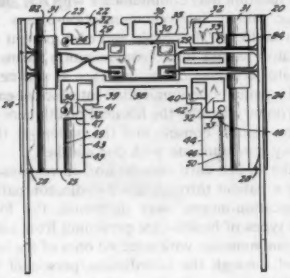
Filed Sep. 14, 1979, Ser. No. 75,688

Int. Cl.³ H04M *13/00*

U.S. Cl. 179—35 **3 Claims**

1. A bridge lifter module for use in conjunction with a tele-

phone connector block having a plurality of exposed electrically conductive spring fingers, comprising: a casing element including first and second synthetic resinous generally planar members disposed in abutted relation to define an internal recess therebetween, an encapsulated bridge lifter circuit element secured within said recess and having leads projecting outwardly therefrom to a pair of exposed surfaces of said planar



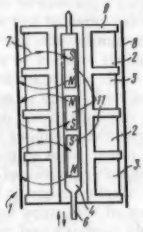
members, a pair of flexible elongated contact members mounted upon said exposed surfaces, each contact member having a pair of oppositely disposed electrically conductive surfaces thereon, each of said conductive surfaces communicating with one of said leads, said contact members extending outwardly of said housing element in a single direction, and having free ends thereon for engagement between said spring fingers of said connector block to be retained thereby.

4,237,347

ELECTRODYNAMIC TRANSDUCER WITH LONGITUDINALLY MOVING MAGNET

Valentin M. Burundukov, and Sergei V. Burundukov, both of ulitsa Entuziastov, 14a-14, Chelyabinsk, U.S.S.R.

Filed Mar. 14, 1978, Ser. No. 886,549
Int. Cl.[2] H04R *11/08, 11/04*
U.S. Cl. 179—100.41 M **42 Claims**



1. An electrodynamic transducer converting mechanical oscillations into electric signals and vice versa, comprising:

(a) a coil having n pairs of sections, the members of each pair being wound in opposite directions;

(b) a magnet subdivided into separate parts and being placed into said coil and arranged for movement in a longitudinal direction;

(c) like poles of two adjacent ones of said separate parts of said magnet being arranged facing each other, said like poles being located in one of said members of said pairs of said sections of said coil; and

(d) an actuator mechanically coupled to said magnet.

4,237,348

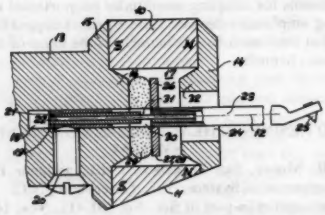
Patent Not Issued For This Number

4,237,349

COMPACT MOVING-COIL PICKUP OF LOW WEIGHT AND HIGH QUALITY

Bjarne S. Hansen, Fredensborg, and Robert Gudmandsen, Taastrup, both of Denmark, assignors to Ortofon Manufacturing A/S, Valby, Denmark

Filed Dec. 28, 1978, Ser. No. 973,922
Claims priority, application Japan, Dec. 29, 1977, 52-160954
Int. Cl.[3] H04R *9/12*
U.S. Cl. 179—100.41 D **8 Claims**



1. A moving-coil pickup comprising a relatively flat armature including at least one winding, a stylus arm to which said armature is fixed, and at least one permanent magnet for producing a magnetic field in which said armature is tiltably mounted, wherein said at least one permanent magnet comprises at least one part of a relatively short tube at least partly enclosing, and being substantially coaxial with, the armature.

4,237,350

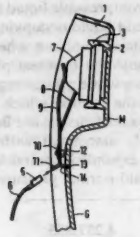
TELEPHONE HANDSET

Hugo Ruzic, Leonberg, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 9, 1979, Ser. No. 10,858
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 7804970
Int. Cl.[3] H04M *1/02, 1/03*
U.S. Cl. 179—103 **7 Claims**

1. A telephone handset with a two-part plastic housing divided in the longitudinal direction, comprising:

lower part means having receptacles for receiving electro-acoustic transducers, said receptacles being formed by annular rib means moulded thereto;



engaging hook means on said annular rib means for gripping said transducers;

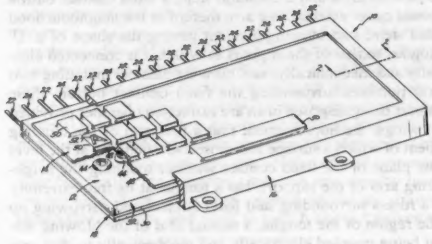
peg means moulded to said lower part means; and contact spring means positioned on said peg means.

4,237,351

KEYBOARD APPARATUS

Henry J. Boulanger, Cumberland, R.I., and Richard E. Puccini, Taunton, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 2, 1978, Ser. No. 947,686
Int. Cl.[3] H01H *9/02*
U.S. Cl. 200—5 A **14 Claims**



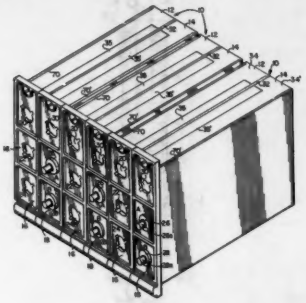
1. A switch assembly comprising electrically conductive switch members mounted on housing means to permit relative movement of a pair of the members between an open circuit position in which the members of the pair are spaced from each other and a closec circuit position in which the members of the pair are engaged with each other, characterized in that the housing means comprises thin, flexible, electrically insulating sheet material which is of substantially uniform material thickness throughout its extent having substantially flat and relatively flexible web portions of the thin sheet material arranged to interconnect relatively more rigid cupped portions of the thin sheet material and having selected ones of said web and cupped portions of the sheet material engaging the switch members of the pair and cooperating to normally maintain the pair of members between said portions of the sheet material in one of said circuit positions while permitting selective flexing of web portions of the sheet material to cause selective movement of the pair of switch members to the other of said circuit positions.

4,237,352

PATCH MODULE FOR CONNECTING TO OFF-LINE TRANSMISSION LINES OF A SWITCHABLY SELECTED PAIR OF TRANSMISSION LINES

Lewis J. Seiden, Tappan, N.Y., assignor to T-Bar Incorporated, Wilton, Conn.

Filed Apr. 6, 1979, Ser. No. 27,797
Int. Cl.[3] H01R *19/52*
U.S. Cl. 200—51.03 **11 Claims**



1. A patch module permitting selective on-line connection between either alternative first sets of transmission lines and a single second set of transmission lines and providing patch connection into an off-line first set, comprising:

a housing providing a support frame for the module components;

input coupling means into the module housing for each of the three sets of transmission lines;

a set of stationary off-iine patch terminals supported by the housing; and

selector switch means selectively connecting one of the alternative first sets of transmission lines on-line to the single second set of transmission lines and the other first set to the off-line patch terminals in one condition and in the alternate switch condition connecting the other first set on-line to the second set of transmission lines and the one to the off-line patch terminals.

4,237,353

TELESCOPIC SPRING OPERABLE AS AN ELECTRIC SWITCH

Andreas U. Nemenz, Rutesheim, Fed. Rep. of Germany, assignor to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 963,277
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1977, 7736254[U]
Int. Cl.[3] H01H *3/12, 35/38;* F16F *9/50*
U.S. Cl. 200—52 R **17 Claims**

1. A telescopic spring operable as an electric switch comprising;

(a) an outer spring member formed with a cavity therein;

(b) an inner spring member connected to said outer spring member for movement inward and outward of said cavity between two terminal positions,

(1) a first portion of said inner spring member being located in said cavity in said two terminal positions; and

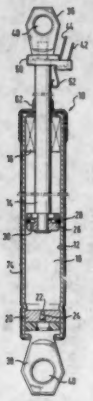
(2) a second portion of said inner spring member projecting outward from said cavity in said two terminal positions,

(3) said second spring member portion having an electrically conductive portion;

(c) fastening means for fastening said outer spring member and said second portion of said inner spring member to respective objects;

(d) yieldably resilient means in said cavity biasing said inner spring member outward of said cavity;

(e) a contact element carried by one of said spring members outside said cavity, said electrically conductive portion of said inner spring member being engaged by said contact



element during one portion of the movement of said inner spring member between terminal positions;

(f) insulating means carried by the other of said spring members outside said cavity for insulating said contact element from said electrically conductive portion during another portion of the movement of said inner spring member between said terminal positions; and

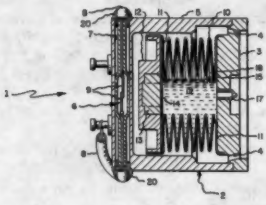
(g) two electrical connectors disposed outside said cavity for connection to electrical leads and conductively connected to said contact element and said electrically conductive portion, respectively.

4,237,354

PRESSURE CHANGE RESPONSIVE DEVICE

John D. Rockenfeller, Grand Island, and Thomas E. Llewellyn, Lockport, both of N.Y., assignors to Textron Inc., Providence, R.I.

Filed Dec. 21, 1978, Ser. No. 971,861
Int. Cl.³ H01H *35/32*
U.S. Cl. 200—83 C **13 Claims**



1. A pressure responsive apparatus capable of withstanding high pressures relative to the normal pressure range within which said apparatus is operative without experiencing losses in operability, sensitivity or calibration, said apparatus including:

(a) a hermetically sealed container having at least one elastically flexible portion which permits said container to contract and expand in proportion to externally applied pressure within said normal pressure range, correspondingly to define a minimum volume corresponding to the highest pressure in said range and a maximum volume corresponding to the lowest pressure in said range;

(b) a substantially incompressible liquid in the interior of said sealed container, said liquid occupying a volume which is less than said minimum volume whereby to permit said container to be subjected to a test pressure greater than said highest pressure while preventing said container from collapsing beyond the point at which said flexible portion of said container exceeds its elastic limit; and

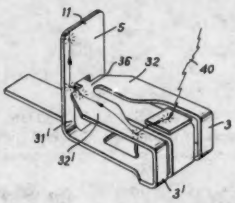
(c) means operatively associated with said container for responding to the expanded/contracted condition of said container within said normal pressure range.

4,237,355

BLOWING ELEMENT

Louis Fechant, Le Vesinet; Jean-Pierre Guery, Poissy, and Gabriel Martin, Houilles, all of France, assignors to La Telemecanique Electrique, Nanterre, France

Filed Jan. 25, 1978, Ser. No. 872,188
Claims priority, application France, Jan. 25, 1977, 77 02009
Int. Cl.² H01H *33/18*
U.S. Cl. 200—147 R **5 Claims**



1. In a blowing element for use with an arc contact assembly having a movable contact, a support in the shape of a 'U' with two parallel arms and a common stem, a fixed contact button disposed on an external free arm thereof in the neighbourhood of said stem, said blowing element having the shape of a 'U' analogous to that of the support to which it is connected electrically and mechanically, said blowing element including two lateral portions surrounding the fixed contact button, these members being disposed in an arc extinction chamber provided with wings, the improvement that a first arm of the blowing element of which a surface is disposed substantially at the level of the plane of the fixed contact without touching the neighbouring arm of the support, has a tongue at its free extremity and a recess surrounding said fixed contact and narrowing up to the region of the tongue, a second arm of the blowing element being coupled electrically and mechanically to that arm of the support not carrying said fixed contact, the blowing element having a third arm, fast to the extremity of the second arm, including an opening and rising perpendicularly to the first and second arms such that its extremity is substantially above the plane of the first arm in order to enter into the arc extinction chamber, of which it constitutes a first wing, and such that said tongue enters into said opening.

4,237,356

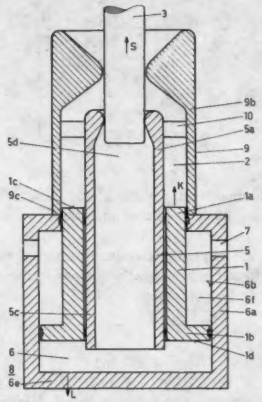
ELECTRICAL COMPRESSION SWITCH WITH CONTACT MOVEMENT ASSISTOR

Klaus Ragaller, Neuenhof, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Apr. 13, 1977, Ser. No. 787,215
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A **9 Claims**

1. In an electrical compression switch, the combination

comprising means forming a switch contact chamber containing a pressurized gaseous arc quenching medium and a pair of contacts one of which is a pin contact and the other a tubular nozzle contact for receiving said pin contact, a tubular nozzle member made of insulating material surrounding said pin contact in engagement therewith and also surrounding said tubular nozzle contact in spaced relation to establish a compression chamber therebetween for the arc quenching medium, means forming an expansion chamber for the arc quenching medium within said switch chamber adjacent said tubular nozzle member of insulating material, a tubular differential diameter piston surrounding said tubular nozzle contact, the peripheral surface at the larger diameter end of said tubular piston and having the larger end surface area being slidable in a gas-sealed manner along the wall of said quenching medium expansion chamber and the opposite smaller diameter end of



said tubular piston having the smaller end surface area being slidable with its internal and external surfaces in a gas-sealed manner along the external surface of said tubular nozzle contact and the internal surface of said tubular nozzle member of insulating material respectively, and means for effecting movement of said pin contact and said differential piston considered as one unit relative to said nozzle contact, said tubular nozzle member of insulating material and said quenching medium expansion chamber considered as another unit to effect disengagement of said switch contacts and separation between said pin contact and said tubular nozzle member of insulating material as well as relative movement between said differential piston and said tubular nozzle member of insulating material in such direction as to decrease the volume of said compression chamber for the arc quenching medium and thereby increase the pressure of the quenching medium on the arc drawn between said contacts, and assist in switch contact movement.

4,237,357

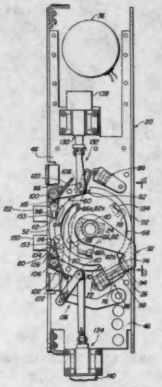
OPERATING MECHANISM FOR A HIGH-VOLTAGE SWITCH

John C. Opfer, Deerfield, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Apr. 4, 1979, Ser. No. 26,867
Int. Cl.[3] H01H *3/30*
U.S. Cl. 200—153 SC **8 Claims**

4. An improved switch operator of the type having (a) an output member connectable to the switch, the output member being movable in a first direction to a first position from a second position to operate the switch, and being movable in a second direction to the second position from the first position to operate the switch in an opposite sense; (b) stored energy means for moving the output member in the first and second directions by the discharge thereof, the stored energy means being chargeable, when the output member is held in the second position, for subsequent discharge to move the output member in the first direction and being chargeable, when the output member is held in the first position, for subsequent discharge to move the output member in the second direction; and (c) selectively energizable means for charging the stored energy means; wherein the improvement comprises:

first means responsive to failure of the output member to be held in the first position following its movement in the first direction by the discharge of the stored energy means for energizing the charging means, thereby recharging the



stored energy means to move the output member in the first direction and to maintain the output member in the first position until it is held thereat; and

second means responsive to failure of the output member to be held in the second position following its movement in the second direction by the discharge of the stored energy means for energizing the charging means, thereby recharging the stored energy means to move the output member in the second direction and to maintain the output member in the second position until it is held thereat.

4,237,358

ISOLATION MEMBRANE SWITCH

Willis A. Larson, Crystal Lake; Steven D. Vannice, Marengo, and Joseph E. Jesson, Lake Villa, all of Ill., assignors to Oak Industries Inc., Crystal Lake, Ill.

Filed May 7, 1979, Ser. No. 36,353
Int. Cl.[3] H01H *3/02, 3/12*
U.S. Cl. 200—159 B **5 Claims**

1. In a membrane switch, a substrate, a plurality of first conductors formed on said substrate, a flexible switch membrane, a plurality of second conductors formed on said switch membrane, a spacer positioned between said substrate and switch membrane, openings in said spacer in register with aligned first and second conductors, a pressure reduction membrane overlying and in contact with the exterior of said switch membrane, said pressure reduction membrane being at least partially slit in areas in register with said spacer openings, and an isolation membrane overlying said pressure reduction membrane, the application of pressure to said isolation membrane in areas in alignment with said spacer opening causing said switch membrane to move toward said substrate through a spacer opening to effect contact between aligned first and second conductors.

4,237,359

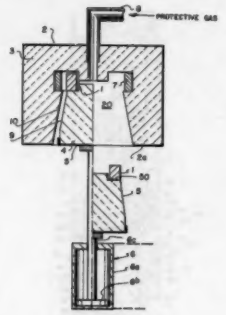
METHOD AND APPARATUS FOR THE ELECTROINDUCTION HEATING OF METAL WORKPIECES

Günther Röth, Remscheid, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany

Continuation of Ser. No. 701,129, Jun. 30, 1976, abandoned. This application Dec. 23, 1977, Ser. No. 863,702

Int. Cl.[3] H05B *6/02, 6/26;* C21D *1/74*

U.S. Cl. 219—10.41 14 Claims



1. A method of heating metal workpieces by induction so as to minimize scale formation and decarburization, said method comprising the steps of:

providing relative vertical movement between a workpiece surrounded by air and a heat-resistant hood defining a cavity open at the bottom of the air, said relative vertical movement causing said workpiece to be within the upper part of said cavity and closely surrounded above and on the sides by said hood,

filling substantially all of the remainder of said cavity below said workpiece with non-conductive, solid, heat-resistant material to displace substantially all of the air originally within said hood but leaving an air passage from said upper part of said cavity down through the lowermost part of said cavity to the surrounding air; and

inductively heating said workpiece.

4,237,360

INDUCTION HEAT SEALING

Elmer E. Pohlenz, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 6, 1978, Ser. No. 958,055

Int. Cl.[3] H05B *6/10;* B65B *7/28*

U.S. Cl. 219—10.41 7 Claims

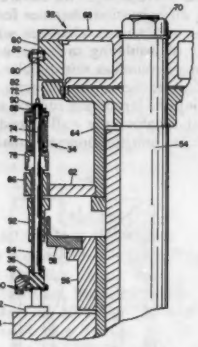
1. A method of induction heat sealing metal closures on containers comprising:

providing unsealed container-closure assemblies each of which includes a container having an open end with an upwardly facing sealing surface therearound and a metal closure member spanning the open end of the container and disposed against the sealing surface and with at least one of said closure member and said sealing surface having a heat seal resin thereon;

feeding the unsealed container-closure assemblies into a sealing machine comprising a rotating turret having a plurality of spindles therein with each spindle having a non-metal rotating head thereon for engaging the closure member on an underlying container supported by a resilient support means and rotating the container-closure assembly about the vertical axis of the container as the assembly is rotated about the axis of the turret, said sealing machine having an induction heating coil disposed at least partway around the turret closely adjacent to the rotating heads to provide a magnetic field in the area of the heads;

engaging the non-metal head against the top of the closure assembly to press the metal closure member against the sealing surface on the container and precisely position the contact area between the closure and the sealing surface of the container as it rotates through the magnetic field;

rotating the container-closure assemblies through the magnetic field to heat the closure member at its contact with



the container sealing surface and heat said resin while minimizing heating of said member beyond such area of contact; and

removing the container-closure assemblies from the magnetic field to cool the heat seal resin and seal each closure member to its container.

4,237,361

BUILDUP WELDING OF INCLINED SURFACES

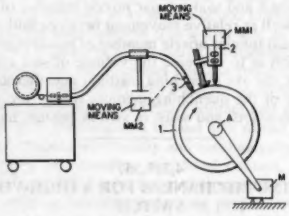
Wolfgang Zwintscher, Soest; Horst Kittel, Hamm-Pelkum, and Hinrich Ruge, Hamm, all of Fed. Rep. of Germany, assignors to August Thyssen Aktiengesellschaft, Duisburg-Hamborn, Fed. Rep. of Germany

Continuation of Ser. No. 679,331, Apr. 22, 1976. This application Mar. 29, 1978, Ser. No. 891,344

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1975, 2519274

Int. Cl.[3] B23K *9/04, 9/18*

U.S. Cl. 219—76.1 5 Claims



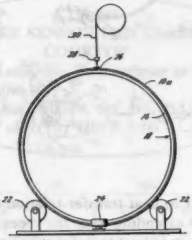
1. For a workpiece having an inclined or vertical region defined by at least one edge, a method of building up the region of the workpiece by deposition on it of weld metal by fusion arc welding comprising: the steps of building up an elongated barrier along the one edge of said region by depositing weld material with a first arc welding device producing an arc of sufficiently low power that the molten weld material can form a barrier on the region without mechanical run-off preventing aids while leaving the end of the region otherwise free of extensions, and then building up a part of the region against said barrier by depositing weld metal with a second welding device having a higher power arc.

4,237,362

METHOD OF PRODUCING HARDFACED PLATE

Roman F. Arnoldy, Houston, Tex., assignor to Tapco International, Inc., Houston, Tex.

Filed Sep. 28, 1978, Ser. No. 946,677
Int. Cl.[3] B23K 9/04
U.S. Cl. 219—76.14 13 Claims



1. A method of producing hardfaced plate comprising,

disposing a sheet-like plate of relatively ductile and weldable material and having a thickness of up to about ½" about a cylindrical supporting surface,

then welding hardfacing material to the plate's surface, the distance between the plate and the cylindrical supporting surface being such that upon the welding of the hardfacing material to the plate surface, the plate is supported by the cylindrical supporting surface in a rigid cylindrical shape thereby avoiding sustantial distortion of the plate during the welding and maintaining stickout at a substantially constant distance, the supporting surface dissipating welding heat effective to prevent the plate from being overheated and excessively melted to dilute the hardfacing material, and

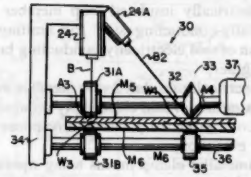
removing the plate from the cylindrical supporting surface after the welding of the hardfacing material to the plate's surface.

4,237,363

BEAM WELDING APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 572,143, Apr. 28, 1975, abandoned, which is a continuation-in-part of Ser. No. 523,865, Nov. 14, 1974, abandoned, which is a continuation-in-part of Ser. No. 506,887, Sep. 17, 1974, abandoned. This application Feb. 4, 1977, Ser. No. 765,597
Int. Cl.[3] B23K 26/08, 15/00
U.S. Cl. 219—121 LM 4 Claims



1. A method of welding comprising:

driving first and second members between powered endless surface means into abutment with each other with at least portions of the abutting portions of each member engaged by said endless surface means and wherein portions of the materials of said engaged portions of said first and second members are heat softenable and are of a characteristic such that said heat softenable portions will become welded together when compressed and heated to a weldable condition and are thereafter cooled to a set condition,

generating an intense beam of radiation and directing said radiation beam against a surface of at least one of said members along an axis which intersects the other member near the interface of the abutment of the two members,

transferring heat from said beam to condition abutting portions of the materials of said first and second members in the vicinity of said endless surface means for welding and intermittently operating an auxiliary clamping means to engage and disengage said first and second members so as to intermittently apply compressive force thereto and to cause portions of the materials of the two members to intermingle with each other, and

solidifying the intermingled materials of said first and second members to effect a fusion welding to the two members together in the vicinity where said beam intersects said one member.

3. A method of welding comprising:

driving first and second members between powered endless surface means into abutment with each other with at least portions of the abutting portions of each of said members engaged by said endless surface means and wherein portions of the materials of the engaged portions of said first and second members are heat softenable and are of a characteristic such that said heat softenable portions will intermingle with each other and become welded together when heated to a weldable condition and thereafter cooled to a set condition,

generating an intense beam of radiation and directing said radiation beam against said endless surface means to heat said endless surface means and transfer heat therefrom to said first and second members,

causing portions of the materials of said first and second members engaged between and heated by said endless surface means to become heat softened and to intermingle with each other, and

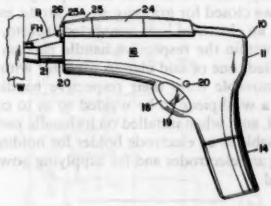
solidifying the intermingled materials of said first and second members to effect a fusion welding of the two members together in the vicinity of said endless surface means.

4,237,364

WELDING TOOL AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 825,698, Aug. 18, 1977. This application Sep. 9, 1977, Ser. No. 831,778
Int. Cl.[3] B23K 26/02
U.S. Cl. 219—121 LC 7 Claims



1. A tool for welding a workpiece in a selected area comprising:

a support defining a housing including a handle portion for holding and directing said housing in a given direction,

welding radiation generating means supported within said housing and operable, when energized, to generate and direct a narrow beam of intense radiation longitudinally through said housing along a fixed path in a given direction,

an opening at one end of said housing through which the radiation beam passes,

first means supported by said housing and extending in said given direction for supporting the end of said housing a predetermined distance from the surface of an article to be welded by said intense radiation beam,

second means at the end of said first means for prepositioning said tool with respect to a workpiece in a manner to indicate and define the location of the surface of said workpiece to be welded which will be intersected by the beam generated by said radiation generating means and passed through said opening,

said first and second means having a common axis which is offset from said opening,

said second means engaging said workpiece to be welded in a conforming manner to align the radiation beam with a preselected area of the workpiece to be welded, and

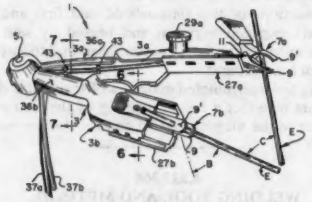
switching means controlling the generation of said radiation beam whereby, when said second means is predeterminately engaged against the surface of a workpiece to be welded, radiation may be controllably generated by said radiation generating means and will intersect a predetermined area of said workpiece.

4,237,365

COMBINATION ARC BRAZING AND WELDING ELECTRODE HOLDER

William S. Lambros, St. Louis, and James I. Metzger, Jr., Manchester, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 6, 1978, Ser. No. 966,787
Int. Cl.³ B23K *9/28*; H05B *7/101*
U.S. Cl. 219—139 **18 Claims**



15. A combination arc brazing and arc welding electrode holder comprising a handle having two parts, each of said handle parts carrying an electrode holding clamp, each of said clamps comprising a pair of hinged jaws pivotally movable toward and away from one another and a spring for resiliently biasing said jaws closed for gripping an electrode, each of said clamps having an electrical lead connected thereto, said leads being carried within the respective handle part on which its clamp is mounted, one of said clamps together with its power lead being removable from their respective handle part for attachment to a workpiece to be welded so as to constitute a grounding lead, and, when installed on its handle part, said one clamp being usable as an electrode holder for holding one of a pair of brazing arc electrodes and for supplying power thereto via its said lead.

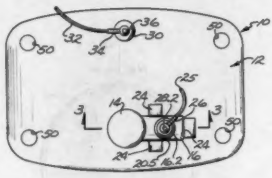
4,237,366

HEATED AUTOMOBILE MIRROR

Peter G. Berg, Attleboro Falls, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 19, 1979, Ser. No. 21,379
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—219 **10 Claims**

1. A defogging mirror unit comprising a thermally conducting heat-distributing plate material formed to provide a recess in part of the plate material to be accessible from one side of the plate material, an electrical resistance heater of a material of positive temperature coefficient of resistivity having one side thereof mounted on said one side of the plate material within the recess in thermally and electrically conducting relation to the plate material, means electrically connected to the opposite side of the resistance heater for connecting the heater in an electrical circuit to energize the heater, a reflecting member having a reflecting surface, and means securing the



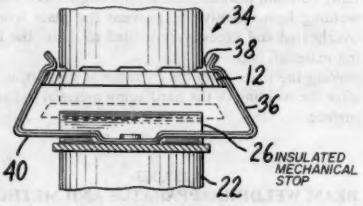
reflecting member in heat transfer relation to said one side of the plate material extending over the recess for enclosing the heater therebetween in heat-transfer relation to the plate material for heating the plate material to distribute heat from the heater to the reflecting member for defogging the reflecting surface thereof.

4,237,367

NO-RELIGHT CIGAR LIGHTER SOCKET

Walter Pecota, Parsippany, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Dec. 6, 1978, Ser. No. 967,058
Int. Cl.³ F23Q *7/24*
U.S. Cl. 219—265 **5 Claims**



1. A no-relight cigar lighter socket comprising:

(a) a socket housing;

(b) an electrically conducting stud secured to and electrically insulated from the socket housing;

(c) a bimetallic clamp means affixed to said stud, said bimetallic clamp means being capable of retaining an electrically-conducting burner cup of a cigar lighter at a first extended position when the same is inserted therein;

(d) an electrically insulated stop member affixed to said electrically-conducting stud for limiting the maximum insertion of said electrically-conducting burner cup of said cigar lighter;

(e) said electrically-insulated stop member limiting the maximum extension of said electrically-conducting burner cup to a second extended position in response to force urging further extension;

(f) said bimetallic clamp means being operative to connect electrical heating power to said electrically-conducting burner cup in said first extended position whereby an electric lighting element in said electrically conducting burner cup is heated;

(g) said bimetallic clamp means being adapted to release said electrically conducting burner cup upon said electrically conducting burner cup attaining a predetermined temperature; and

(h) said bimetallic clamp means having means for providing mechanical clearance between said electrically-conduct-

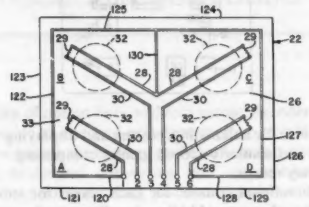
ing burner cup and said bimetallic clamp means when said electrically-conducting burner cup is urged from its first extended position toward its second extended position whereby there is electrical contact between said bimetallic clamps and said electrically-conducting burner cup only when said electrically-conducting burner cup is in said first extended position.

4,237,368

TEMPERATURE SENSOR FOR GLASS-CERAMIC COOKTOP

Stanley B. Welch, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jun. 2, 1978, Ser. No. 912,162
Int. Cl.³ H05B *3/00*
U.S. Cl. 219—449 **8 Claims**



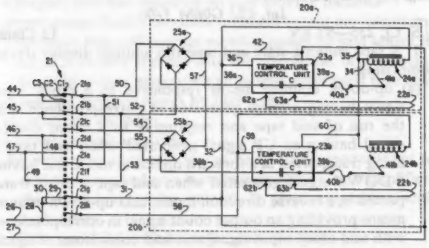
1. A flat surface heating unit comprising a utensil-supporting cover plate of heat conductive material and having a resistance characteristic dependent on the temperature of the plate, a heating element disposed beneath said plate and adapted to be energized for heating said plate, a pair of elongated spaced conductors affixed to the underside of said plate for measuring the change in resistance of a heated region of the plate, means including a resistive element connected across distal ends of said elongated spaced conductors for testing the continuity of said spaced conductors, and means for operably connecting said heating element so as to be controlled in response to the measured change of resistance of said plate, the resistance of the heated region of said plate being measured and the continuity of said conductors being tested at proximal ends of said elongated spaced conductors.

4,237,369

WILD STRESS RELIEF POWER SUPPLY APPARATUS

Robert H. Jones, P.O. Box 1518, Stouffville, Ontario, Canada (L0H 1L0)

Filed Jan. 31, 1979, Ser. No. 8,041
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—503 **6 Claims**



1. Power supply apparatus for selectively energizing first and second electrical resistance heating elements, comprising

power supply transformer means for transforming an electrical supply current;

said power supply transformer means comprising first and second secondary winding means in series with one another for delivering electrical power from said power supply transformer means;

first, second and third conductors for connection to said first and second heating elements;

first and second connecting means for connecting said first and second conductors to respective opposite ends of said secondary winding means;

third connecting means for connecting said third conductor between said first and second secondary winding means;

first and second temperature sensing means for providing first and spaced temperature signals corresponding to the temperatures of zones heated by said first and second heating elements, respectively;

first and second temperature responsive control means for providing power supply control signals in response to said first and second temperature signals, respectively;

first and second control signal responsive means for varying the current flow through said first and second connecting means in response to the power supply control signals;

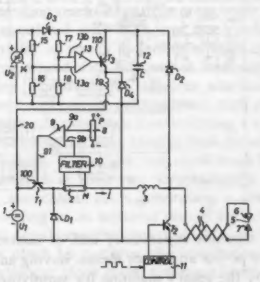
switch means for connecting said first and second temperature responsive control means to said first and second control signal responsive means, respectively, to control the latter independently of one another, in a first switch position and for connecting said first temperature responsive control means to both of said first and second control signal responsive means, to effect common control of the latter, and disconnecting said second temperature responsive control means from said second control signal responsive means in a second switch position; whereby said apparatus can be operated to deliver electrical power in a first operational mode form both of said secondary winding means in a single heating circuit, in a second operational mode from said first and second secondary winding means in two respective heating circuits and in a third operational mode from one of said first and second secondary winding means in a single heating circuit.

4,237,370

PULSE GENERATOR FOR METAL MACHINING BY ELECTRIC DISCHARGES

Werner Ullmann, Muralto-Locarno, Switzerland, assignor to Elmapa N.V., Willemstad, Netherlands Antilles

Filed Jun. 2, 1978, Ser. No. 911,988
Claims priority, application Switzerland, Jun. 3, 1977, 6878/77
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 P **9 Claims**



1. A generator for generating pulses for metal machining by electric discharges across a work gap defined by a pair of electrodes, comprising:

means providing a low-ohm and low-loss primary current circuit for producing and transmitting pulse shapes to the pair of electrodes;

said primary current circuit containing a power source fur-

nishing a voltage having a value which is only that much greater than the operating voltage of a pulse flowing through the work gap as is needed for positively overcoming voltage losses arising at the primary current circuit;

a signal generator connected in circuit with the primary current circuit for producing a signal pulse corresponding to a desired current pulse shape;

said primary current circuit containing switch means for regulating the current flow in the primary current circuit and measuring feeler means;

a comparator for controlling said switch means as a function of the desired pulse shape generated by the signal generator and the value of the current flowing through the primary current circuit and tapped-off by the measuring feeler means;

said primary current circuit further comprising magnetic energy storage means and additional switch means connected parallel to said work gap for producing a voltage whose value is greater than the voltage of the power source;

said primary current circuit being structured such that there is only present stray capacitance; and

means for preventing the presence of too great a voltage; at the energy storage means comprising: a voltage source for providing a reference voltage; a comparator for comparing the reference voltage provided by the voltage source with an actual voltage appearing at the energy storage means; and semi-conductor switch means controlled by said comparator to enable discharge of excessive voltage in the presence of too high a voltage at the energy storage means.

4,237,371

ROTARY MACHINE ELECTRONICS SUPERVISORY AND CONTROL APPARATUS

Maurice LeBouder, Nimes, France, assignor to Fernotex Fernost-Testihandel, Austria

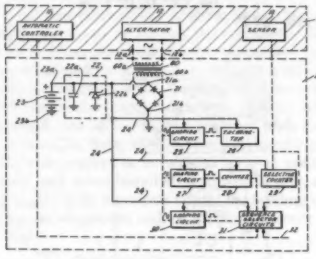
Continuation-in-part of Ser. No. 692,316, Jun. 3, 1976, Pat. No. 4,152,580. This application Apr. 10, 1978, Ser. No. 894,898

Claims priority, application France, Jun. 20, 1975, 75 20181

The portion of the term of this patent subsequent to May 1, 1996, has been disclaimed.

Int. Cl.[3] G07C *3/04*

U.S. Cl. 235—92 PD **6 Claims**



1. A rotary machine supervisory and/or control apparatus comprising low power alternator means, having an output, and being driven by the rotary machine for supplying alternating current at said output, electronic signal shaping circuit means connected to said alternator means output for converting the waves of the alternating current supplied by the alternator means into rectangular pulses, electronic pulse counter means for counting and recording said pulses during predetermined periods, and rectifier means connected to said alternator means output for supplying a low voltage direct current to all the electronic components of the apparatus.

4,237,372

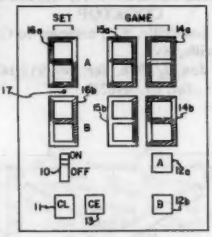
SCOREKEEPING DEVICE FOR TENNIS AND SIMILAR GAMES

Victoria H. Zevgolis, Hopewell, Va., and Harry E. Kitchen, Gaithersburg, Md., assignors to Sportsonic, Inc., Alexandria, Va.

Filed Jun. 14, 1978, Ser. No. 915,463

Int. Cl.[3] G08B *23/00*; H03K *21/22*

U.S. Cl. 235—92 GA **10 Claims**



1. A device for calculating, storing and displaying the scores for tennis and similarly-scored games, comprising:

data entry means,

one bidirectional counter for each player for storing score results, wherein said bidirectional counter is responsive to said data entry means and to encoder means, and wherein said bidirectional counter counts in one direction for normal scoring situations, and counts in the opposite direction for special scoring situations and for returning to the immediately prior value of said score results,

encoder means responsive to said bidirectional counter and to said data entry means for providing command data to determine subsequent contents of said bidirectional counter, wherein said encoder means recognizes a condition in which a special scoring mode must be invoked, and

indicator means responsive to said bidirectional counter, for indicating said score results.

4,237,373

MAGNETIC TAPE RUNNING STATE AND TAPE RUN AMOUNT DISPLAY DEVICE

Masanao Okatani; Hiroshi Onishi; Yoshiaki Ishibashi; Reisuke Sato; Hisashi Suganuma; Tomohisa Yokogawa; Yoshiharu Ueki; Haruo Kama; Tadashi Kosuga, and Tadashi Ogawa, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 29, 1978, Ser. No. 937,899

Claims priority, application Japan, Aug. 30, 1977, 52/103985; Aug. 30, 1977, 52/103987

Int. Cl.[3] G06M *3/06*

U.S. Cl. 235—92 EV **12 Claims**

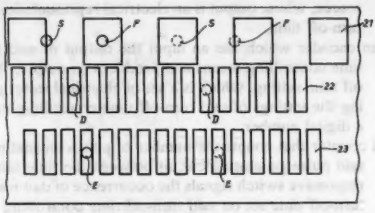
1. A tape running state and tape run amount display device comprising:

(a) up-down counter means responsive to a clock input signal having a pulse generated in correspondence with the run of said tape and responsive to a count control signal having an UP signal generated when said tape is being transported in a forward direction mode and having a DOWN signal generated when said tape is being transported in a reverse direction mode, said up-down counter means providing an output count signal in correspondence with said clock input signal and said count control signal; and

(b) display circuit means responsive to said output count signal for selectively lighting a plurality of light means in correspondence to said output count signal; said output count signal from said up-down counter means is provided in binary output bit format on a plurality of lines; and

wherein said display circuit means includes a first decoder

means and a second decoder means, said first decoder means is responsive to a first preselected group of said plurality of lines having the lower significant binary output bits for binary-to-decimal converting said output bits and for providing corresponding decimal signals on a first



plurality of output lines, and said second decoder means is responsive to a second preselected group of said plurality of lines having the higher significant binary output bits for binary-to-decimal converting said output bits and for providing corresponding decimal signals on a second plurality of output lines.

4,237,374

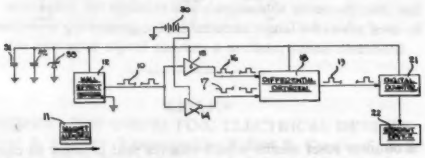
COUNTING SYSTEM FOR COUNTING NEWSPAPERS OR THE LIKE

Douglas J. Malone, 1917 Pullman La., Redondo Beach, Calif. 90278

Filed Apr. 16, 1979, Ser. No. 30,296

Int. Cl.³ H03K *21/06*; G06M *3/12*

U.S. Cl. 235—92 SB **5 Claims**



1. A system for providing a count of the number of paper units passing through a moving member of a printing press or the like comprising

a magnet member mounted on said moving member

sensor means fixedly mounted adjacent to said moving member such that said magnet member passes by said sensor in close proximity thereto with the movement of said member, said sensor generating an output pulse each time said magnet member passes by said sensor,

an inverting amplifier,

a non-inverting amplifier,

the pulse output of said sensor being simultaneously fed to said inverting and non-inverting amplifiers, said amplifiers thereby having pulse outputs in phase opposition with each other,

a differential detector having a pair of inputs,

the output of said inverting amplifier being fed to one of said differential detector inputs and the output of said non-inverting amplifier being fed to the other of said differential detector inputs, the output of said differential detector being a pulse signal which is in accordance with the difference between the inputs fed thereto,

digital counter means for counting the pulse output of said differential detector and providing an output signal in accordance with such pulse count, and

readout means responsive to the pulse count output of said digital counter means for providing a readout indicating the number of pulses counter by said counter means.

4,237,375

OPTO-ELECTRONIC APPARATUS FOR READING INFORMATION CONTAINED IN AN INFORMATION CARRIER

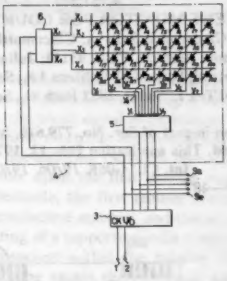
Carl Granholm, Hastings on Hudson, N.Y., assignor to Firma Interlock Sicherheitssysteme GmbH, Stuttgart and Firma Interflex Datensysteme GmbH & Co. K.G., Weigheim, both of, Fed. Rep. of Germany

Filed Oct. 18, 1978, Ser. No. 952,516

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1977, 2747076

Int. Cl.³ G06K *19/00, 5/00, 7/10*

U.S. Cl. 235—487 **28 Claims**



1. In an opto-electronic apparatus for reading coded data from a data carrier that may be moved with respect to said apparatus for presentation thereto of the data which is represented by patterns of areas, each area being either transparent (bright) or opaque (dark) to the passage of radiation, and said apparatus including at least one reading assembly consisting of a source of radiation and an associated receiver of radiation and further including means for guiding said data carrier along a predetermined longitudinal path relative to said at least one reading assembly so that radiation from said source may pass through the transparent ones of said pattern areas to be received by said at least one radiation receiver and said apparatus still further including electronic data processing means for evaluating the data on said data carrier, the improvement wherein:

said data carrier is provided with a plurality of longitudinally extending tracks of pattern areas, each of said tracks having associated with it at least one reading assembly, said plurality of tracks including at least one data track containing stored data bits and at least one clock track containing a plurality of adjacent alternately arranged transparent and opaque pattern areas, each pattern area of said at least one clock track constituting a clock bit, each clock bit having the same longitudinal dimension as every other clock bit, said at least one clock track having associated therewith at least two longitudinally spaced clock reading assemblies, each generating a clock bit signal corresponding to an adjacent one of said clock bits, said clock bit signals together constituting a clock sequence of different clock bit patterns, the longitudinal distance between adjacent clock track reading assemblies exceeding said clock bit longitudinal dimension and being preselected so that, as said data carrier is moved along said predetermined longitudinal path with respect to said apparatus for a distance equal to at least twice said clock bit longitudinal dimension, said clock track reading assemblies generate a clock sequence having at least four different clock bit patterns corresponding to equal portions of the distance said data carrier is moved relative to said apparatus, each data bit of each data track being associ-

ated with a particular clock bit pattern of said clock sequence; and

said data processing means includes a memory holding a first predetermined clock sequence program corresponding to a first clock sequence generated by said clock track reading assemblies as said data carrier is moved along said predetermined longitudinal path with respect to said apparatus in a first direction; and

said data processing means further includes data track evaluating means and comparison means for comparing the clock sequence generated by said clock track reading assemblies with said first predetermined clock sequence program, said comparison means delivering a disabling signal to said data track evaluating means whenever the clock sequence generated by said clock track reading assemblies differs from said first predetermined clock sequence.

4,237,376

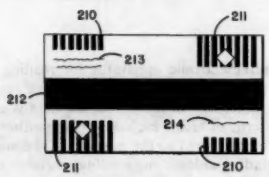
EVENT MONITOR FOR COURT GAMES

Richard A. Giacomotti; Sally A. Giacomotti, both of 542 Calle Mastil, Santa Barbara, Calif. 93111; Julian L. Petrini; Madeline A. Petrini, both of 3748 Meru La., Santa Barbara, Calif. 93105, and Ted L. Slater, 1822 Bath St., Santa Barbara, Calif. 93101

Continuation-in-part of Ser. No. 779,610, Mar. 21, 1977, Pat. No. 4,139,764. This application Feb. 12, 1979, Ser. No. 11,526

Int. Cl.³ G06K *19/06, 19/08*

U.S. Cl. 235—487 **10 Claims**



1. A reusable, programmable card for use in actuating a control system having means for reading multiple tracks of data along the card, the card including:

a first data track having data readable in a first manner and providing, when read by the control system, a first data input for the control system; and

a second data track having data readable in a second manner substantially different than said first manner and providing, when read by the control system, a second data input for the control system, at least one of the data tracks being reprogrammable without substantial alteration of the visual appearance of the card, the second data track being parallel to the first data track and oriented on the card such that the data on the card can be read in at least two different orientations of the card and used to actuate the control system when read in either orientation.

4,237,377

PHOTOELECTRIC LAMP CONTROL WITH SUN-SYNCHRONIZED TIMER

Victor H. Sansum, 2518 Webster St., Palo Alto, Calif. 94301

Filed May 23, 1979, Ser. No. 41,792

Int. Cl.³ H01V *40/14*

U.S. Cl. 250—214 R **8 Claims**

1. A light-responsive control circuit comprising

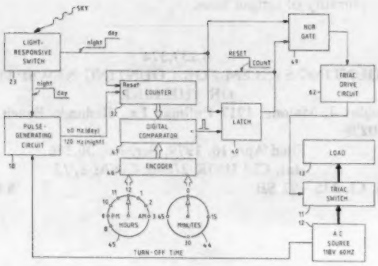
a light-responsive switch which distinguishes daytime from nighttime by representing the light intensity of the daytime sky and the relatively low light intensity of the nighttime sky as binary voltage levels,

a pulse-generating circuit whose output is a train of pulses having a first fixed frequency when said light-responsive switch signals the occurrence of daytime and whose output is a train of pulses having a second fixed frequency, said second fixed frequency being twice the frequency of said first fixed frequency, when said light-responsive switch signals the occurrence of nighttime,

a turn-off time controlling means which is settable by a user to a solar time of night, at which turn-off time every night a load is to be disconnected from an electrical power source, whose output is an electrical representation of said turn-off time,

an encoder which has an input the output of said turn-off time controlling means and produces an output, the turn-off time setting, which is a set of electrical states presenting the settings of said turn-off time controlling means as a digital number,

a counter that counts the number of pulses emanating from said pulse-generating circuit between the time said light-responsive switch signals the occurrence of dawn and said turn-off time set on said turn-off time controlling means, such that, when said turn-off time set on said turn-off time controlling means occurs, the states of the latter stages of said counter, said latter stages constituting the outputs of said counter, constitute a digital number equal to said turn-off time setting,



a counter reset means which enables said counter to count from zero beginning when said light-responsive switch signals the arrival of dawn,

a comparator which signals the occurrence of said turn-off time when said outputs of said counter become equal to said turn-off time setting,

a latch for controlling said counter by allowing counting by said counter between the occurrence of a dawn signal from said light-responsive switch and the occurrence of a signal from said digital comparator indicating the occurrence of said turn-off time, and for maintaining said counter in a reset state between the occurrence of said turn-off time signalled by said digital comparator and the occurrence of a dawn signal from said light-responsive switch,

a first gate circuit which monitors the state of said latch and the state of said light-responsive switch, so that, when said light-responsive switch indicates the occurrence of darkness, and at the same time said latch indicates the counter is counting, then the output of said first gate circuit constitutes a signal commanding that said load be connected to said electrical power source, and

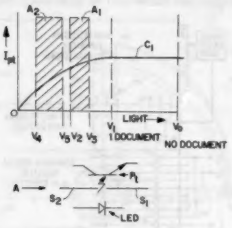
a power switching means which, in response to said signal from said first gate circuit, connects said electrical power source to said load.

4,237,378

PHOTOELECTRIC APPARATUS FOR DOCUMENT COUNTING AND OVERLAP DETECTION

Alan P. Jones, Levittown, Pa., assignor to Brandt-Pra, Inc., Cornwells Heights, Pa.

Filed Dec. 28, 1977, Ser. No. 865,316
Int. Cl.[3] G01V 9/04
U.S. Cl. 250—223R 8 Claims



1. Sensing means for distinguishing between single and double fed documents moving along a feed path at spaced intervals so that the trailing edge of each document is normally spaced from the leading edge of the next succeeding document, said means comprising:

sensing means including a light sensing element positioned to one side of said path;

a light source positioned on the opposite side of said path and aligned so that its light rays are directed toward said light sensing element;

comparator means for comparing the output of said light sensing means, which varies as a function of the light transmission characteristic of the passing documents, against a predetermined threshold for generating a constant level output when the level of the sensing means output reaches the threshold valve;

means coupled to the output of said comparator means for averaging the signal at said comparator means output; and

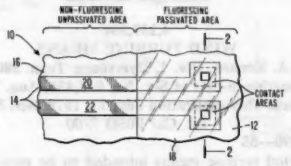
means for generating a doubles sense signal when the level of the averaged signal reaches a predetermined threshold.

4,237,379

METHOD FOR INSPECTING ELECTRICAL DEVICES

Cheryl A. Deckert, Lawrenceville; Robert B. Comizzoli, Belle Mead, both of N.J., and George L. Schnable, Lansdale, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 22, 1979, Ser. No. 51,168
Int. Cl.[3] G09K 3/00
U.S. Cl. 250—302 10 Claims



1. A method for inspecting an electrical device, which has conductors covered by a protective layer of passivating material, to determine the quality of said protective layer comprising the steps of

coating said device with fluorescent dye,

applying electrical energy to two conductors of said device, and

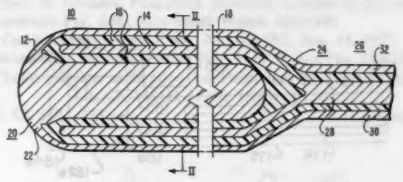
exposing said fluorescent dye to actinic radiation.

4,237,380

SELF-POWERED RADIATION DETECTOR WITH INSULATED INNER AND OUTER COLLECTOR ELECTRODES

Kerwin C. Playfoot, Horseheads, N.Y., and Norman P. Goldstein, Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 27, 1978, Ser. No. 919,573
Int. Cl.[2] G01T 1/24, 3/00
U.S. Cl. 250—370 4 Claims



1. A self-powered radiation detector of a small overall diameter adapted for in-core radiation monitoring in which a radiation flux indicative electrical signal is developed between a spaced apart first emitter electrode and second collector electrode as a result of the differing radiation interactions of the incident radiation flux upon the first emitter electrode and second collector electrode, the first emitter electrode being formed of tubular conductive material, and the second collector electrode consisting of a supporting solid center conductor portion coaxially disposed within the tubular first emitter electrode with insulating means therebetween, and an outer tubular portion disposed coaxially about the tubular first emitter electrode with insulating means therebetween, and wherein the center conductor portion and the outer tubular portion are electrically connected as the second collector electrode.

4,237,381

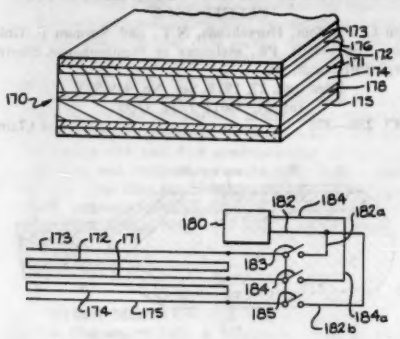
MULTILAYERED ELECTROLUMINESCENT LIGHT ASSEMBLY ADAPTABLE FOR READING AND WRITING IN THE DARK

Becky J. Schroeder, 2317 Valleybrook Dr., Toledo, Ohio 43615

Continuation-in-part of Ser. No. 796,694, May 13, 1977, Pat. No. 4,103,171, which is a continuation-in-part of Ser. No. 639,200, Dec. 9, 1975, Pat. No. 4,024,404, which is a continuation-in-part of Ser. No. 567,397, Apr. 11, 1975, Pat. No. 3,978,340, which is a continuation-in-part of Ser. No. 498,705, Aug. 19, 1974, Pat. No. 3,879,611, which is a continuation-in-part of Ser. No. 428,339, Dec. 23, 1973, Pat. No. 3,832,556, which is a continuation of Ser. No. 288,148, Sep. 11, 1972, abandoned. This application Jul. 24, 1978, Ser. No. 927,400
Int. Cl.[2] F21K 2/00; H05B 33/00, 37/00
U.S. Cl. 250—462 12 Claims

1. An electroluminescent panel assembly having oppositely facing electroluminescent light emitting surfaces comprising a laminar assembly including a pair of light passing electrodes, an intermediate electrode layer of conductive material and a pair of layers containing electroluminescent light emitting matter each interposed between one of said light passing elec-

trodes and said intermediate layer of conductive material permitting selective energization of either or both of said light



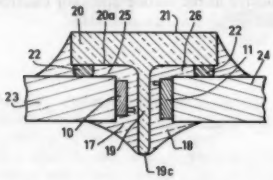
emitting layers and corresponding modification of the light output from said opposite surfaces.

4,237,382

PHOTOCOUPLER DEVICE

Jacques C. Thillays, Herouville-St-Clair, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 17, 1978, Ser. No. 896,497
Claims priority, application France, Apr. 18, 1977, 77 11606
Int. Cl.³ H01J *39/12*
U.S. Cl. 250—551 **11 Claims**



1. A photocoupler device comprising:

a light emitter having electrical connections;

a photosensitive receiver having electrical connections and being situated opposite the light emitter, said emitter and said receiver being coupled optically along an optical axis;

an insulating element comprising a substantially planar shield, said shield providing electrical insulation between the light emitter and the photosensitive receiver, and a base, said base being situated in a plane substantially perpendicular to said shield, said base having two faces with said shield being situated on one face, and said base having two branches which are substantially symmetrical with respect to the shield, a profile of the insulating element having substantially the form of a "T", wherein said insulating element comprises an amorphous transparent thermoplastic polyamide;

a layer of a dielectric transparent material adhering to and situated between the emitter and the shield;

a layer of a dielectric transparent material adhering to and situated between the receiver and shield, the index of refraction and the coefficient of expansion of each of the dielectric materials being near those of the polyamide; and

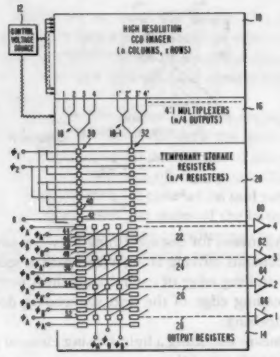
wherein the emitter and the receiver are mounted on separate supports and the base bears on said supports.

4,237,383

HIGH SPEED LOADING OF OUTPUT REGISTER OF CCD ARRAY SYSTEM

Walter F. Kosonocky, Skillman, and Rodney L. Angle, Somerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 20, 1978, Ser. No. 944,013
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—578 **4 Claims**



1. A method for transferring charges from a charge-coupled device (CCD) array comprising a semiconductor substrate, n columns of channels in the substrate, each channel comprising a substrate region defined by potential barriers in the substrate at the channel edges, and electrodes over the channels responsive to applied voltages for the storage of rows of charges in the channels and the propagation of said rows of charges along the channels, in the column direction, comprising the steps of:

translating the n charges in a row of the array, into n/m groups of m serial charges, where each group of m serial charges originates in m adjacent columns, and where m and n are integers and m is greater than 1 and is much smaller than n;

providing m CCD output registers each with n/m stages; and

concurrently serially shifting the n/m groups of serial charges into the respective n/m stages of the output registers, the corresponding charges in the respective groups being shifted in parallel into the output register into which they are stored, each charge in each group of serial charges being concurrently shifted into the same stage of a different output register, whereby upon the completion of the serial shifting, each output register stores 1/m'th of a row of charges from each m'th column of the array.

4,237,384

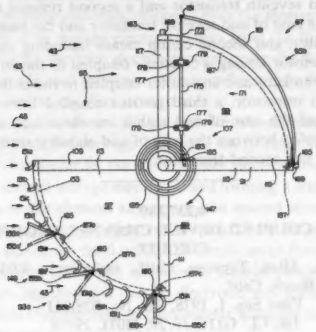
WIND TURBINE MEANS

Woodrow A. Kennon, Rte. 1, Dyersburg, Tenn. 38024

Continuation-in-part of Ser. No. 825,435, Aug. 17, 1977, abandoned. This application Jun. 27, 1979, Ser. No. 52,690
Int. Cl.³ F03D *7/00*
U.S. Cl. 290—55 **20 Claims**

1. In wind turbine means intended to be powered by the wind and being of the type having a wind rotatable turbine wheel with the periphery thereof being defined by numerous vanes, the improvement which comprises shroud means disposed in proximity with selectable ones of the vanes for varying the effectiveness of the wind as it is acting upon said turbine wheel with the effectiveness being in infinite variable stages commensurate with the changing velocity of the wind, said turbine wheel and said shroud means being free to rotate 360° independently about their coextending vertical axes, said shroud means including deflector means for advantageously

directing moving air selectively to effectively increase and decrease the speed of rotation of said turbine wheel commensurate with changing velocities of the wind, means responsive to the changing direction of the wind for properly orienting said shroud means about its vertical axis, and control means for controlling said deflector means with respect to the wind condition at said turbine means; said deflector means including at least a primary quadrant member, and the numerous vanes individually having concave and convex surfaces and being disposed in a uniform array to rotatably drive the turbine wheel in a forward direction as the wind impinges the concave



surfaces and to tend to drive the turbine wheel in a reverse direction as the wind impinges the convex surfaces; said deflector means having a normal position which corresponds to minimal wind velocity conditions, a retard position which corresponds to strong wind velocity conditions, and infinite variable positions therebetween; said primary quadrant member includes primary baffler means for precluding direct impingement of the wind with the convex surfaces of those individual vanes which occupy the forward facing semi-circle of the turbine whee! when said deflector means is in said normal position; said control means being adapted to cause said deflector means to move toward the retard position thereof.

4,237,385

CONTROL OF POWER SUPPLY

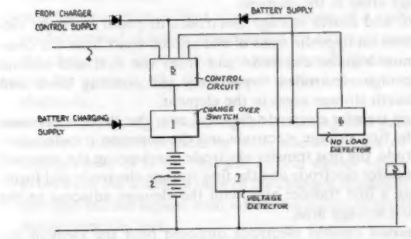
Gunter R. Jurgens, Collaroy Beach, and Mohammed A. Helal, Harbord, both of Australia, assignors to Minitronics Pty, Ltd., Australia

Filed Nov. 3, 1978, Ser. No. 957,065

Claims priority, application Australia, Nov. 4, 1977, PD2307

Int. Cl.[3] H02J *7/00, 9/00*

U.S. Cl. 307—66 **4 Claims**



1. A control system for a power supply comprising a controlled battery change over switch, a battery connected to said controlled battery change over switch which connects said battery to battery charging means, when a mains supply is operative in association with said change over switch, or to a load to be supplied with battery power when said mains supply fails after having been operatively connected, and wherein when the battery voltage, during discharge through the load, has fallen to a predetermined value, a battery voltage detector generates a signal operative to effect switching of said change over switch to disconnect said battery from said load and connect said battery to the charging means.

4,237,386

PLUG-IN MODULE FOR TOUCH CONTROL SWITCHING

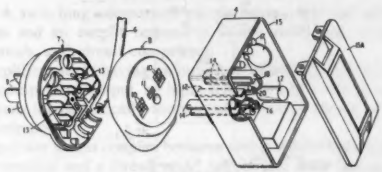
Michael M. Instance, Peakhurst, Australia, assignor to E-Comm Australia Pty. Ltd., New South Wales, Australia

Continuation-in-part of Ser. No. 806,355, Jun. 14, 1977, abandoned. This application Feb. 9, 1979, Ser. No. 10,622

Claims priority, application Australia, Jun. 29, 1976, 6456/76

Int. Cl.[3] H01H *35/00;* **H01R** *33/30*

U.S. Cl. 307—116 **5 Claims**



1. An operator-touch switch assembly for power applied to electrical apparatus, such as an electrical lamp, appliance, and machinery, which apparatus includes a connection for power to said apparatus and a series connected power socket in said connection having a plurality of make-before-break jacks each comprising a pair of normally closed electrical contacts so that the power connection to said apparatus is uninterrupted when the socket is vacant; said switch assembly comprising a housing module; switching electronic circuitry of solid-state components disposed within said housing module; terminal means on said housing module having a first section comprising a pair of spaced pins for plugging-in to a first one of said jacks to engage respective ones of said contacts of said first jack to force them open while maintaining electrical connection therewith and being connected internally of said module across a switching element of said electronic circuitry, and having a second section comprising an electrical conductor for plugging-in to a second one of said jacks to bridge and maintain electrical connection between the normally closed contacts of said second jack; control means for said switching element; and a touch-sensor terminal to which said control means responds; whereby when said module is plugged into said socket said electronic circuitry controls the connection of power to said apparatus.

4,237,387

HIGH SPEED LATCHING COMPARATOR

Don C. Devendorf, and Eugene Baskevitch, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 755,377, Dec. 29, 1976, abandoned, which is a division of Ser. No. 650,820, Jan. 20, 1976, abandoned. This application Feb. 21, 1978, Ser. No. 880,817

Int. Cl.[2] H03K *19/00, 19/20, 3/286, 5/20*

U.S. Cl. 307—203 **10 Claims**

1. A latch network comprising:

input means for providing input signals;

first differential current switch means coupled to said input means for providing differential signals in response to said input signals;

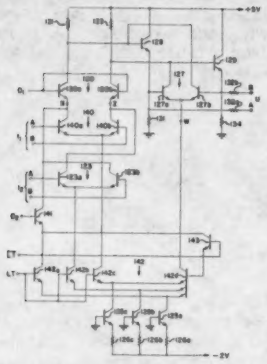
differential regenerative current switch means coupled to said first differential current switch means for providing

preselected logic output states in response to said differential signals;

cascode switch means coupled between said first differential current switch means and said differential regenerative current switch means for providing isolation between said input means and said differential regenerative current switch means;

logic input means for providing logic input control states;

second differential current switch means coupled to said logic input means, to said first differential current switch means and to said differential regenerative current switch means for selectively controlling current flow in said first differential current switch means and said differential



reqenerative current switch means in response to said logic input control states, a first logic input control state causing current flow in said first differential current switch means, a second logic input control state causing current flow in said differential regenerative current switch means thereby providing latched logic output states in response to predetermined differential signals from said first differential current switch means; and

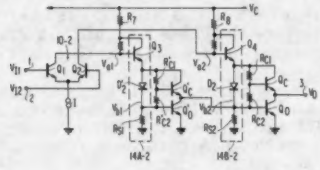
current source means coupled to said second differential current switch means for selectively providing current to said first differential current switch means and said differential regenerative current switch means as controlled by said second differential current switch means.

4,237,388

INVERTER CIRCUIT

Jyoji Nokubo, and Hiroshi Mayumi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,686
Claims priority, application Japan, Jun. 14, 1977, 52-69493
Int. Cl.[3] H03K *19/013, 19/20*
U.S. Cl. 307—214 **2 Claims**



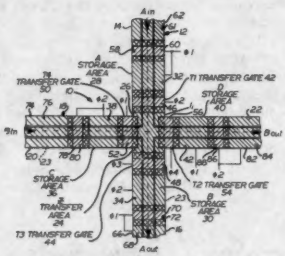
1. An inverter circuit comprising an output terminal, a first bipolar transistor having a collector coupled to said output terminal, a second bipolar transistor having a collector coupled to the base of said first transistor, a current mode logic circuit including third and fourth bipolar transistors having emitters jointly connected to a common junction point and a power supply, first means for controlling said first transistor, said first means including a fifth bipolar transistor having a base coupled to the collector of said third transistor and an emitter coupled to the base of said first transistor, a second means for controlling said second transistor, said second means including a sixth bipolar transistor having a base coupled to the collector of said fourth transistor and an emitter coupled to the base of said second transistor, first clamp means including a seventh bipolar transistor having a collector coupled to the emitter of said fifth transistor and an emitter coupled to the collector of said first transistor, a first resistor coupled between the collector and the base of said seventh transistor and a second resistor coupled between the base of said seventh transistor and the base of said first transistor, and second clamp means including an eighth bipolar transistor having a collector coupled to the emitter of said sixth transistor and an emitter coupled to the collector of said second transistor, a third resistor coupled between the collector and the base of said eighth transistor and a fourth resistor coupled between the base of said eighth transistor and the base of said second transistor.

4,237,389

CHARGE COUPLED DEVICE CHANNEL CROSSOVER CIRCUIT

Reginald A. Allen, Topanga, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sep. 1, 1978, Ser. No. 938,911
Int. Cl.[3] G11C *19/28;* **H01L** *29/78*
U.S. Cl. 307—221 D **2 Claims**



1. A channel crossover circuit comprising:

a semiconductor element,

a common transfer electrode disposed over the element and forming a common transfer area, therein

first and second storage electrodes disposed over the element on opposite sides of and spaced apart from the common transfer electrode and forming first and second storage areas in the element,

third and fourth storage electrodes disposed over the element on opposite sides of and spaced apart from the common transfer electrode and from the first and second storage electrodes respectively and forming third and fourth storage areas in the element,

a first transfer electrode disposed over the element between the first storage electrode and the common transfer electrode, the first transfer electrode overlapping the common transfer electrode and the first storage electrode and forming a first transfer area with the element adjacent to the first storage area,

a second transfer electrode disposed over the element between the second storage electrode and the common transfer electrode, the second transfer electrode overlapping the common transfer electrode and the second storage electrode and forming a second transfer area with the element adjacent to the second storage area,

a third transfer electrode disposed over the element between the third storage electrode and the common transfer elec-

trode, the third transfer electrode overlapping the common transfer electrode and the third storage electrode, and forming a third transfer area with the element adjacent to the third storage area,

a fourth transfer electrode disposed over the element between the fourth storage electrode and the common transfer electrode, the fourth transfer electrode overlapping the common transfer electrode and the fourth storage electrode, and forming a fourth transfer area with the element adjacent to the fourth storage area,

a fifth transfer electrode disposed over the element on a side of the first storage electrode away from the first transfer electrode, the fifth electrode overlapping the first storage electrode, and forming a fifth transfer area in the element adjacent to the first storage area,

a sixth transfer electrode disposed over the element on a side of the second storage electrode away from the second transfer electrode, the sixth transfer electrode overlapping the second storage electrode, and forming a sixth transfer area in the element adjacent to the second storage area,

a seventh transfer electrode disposed over the element on a side of the third storage electrode away from the third transfer electrode, the seventh transfer electrode overlapping the third storage electrode, and forming a seventh transfer area in the element adjacent to the third storage area,

an eighth transfer electrode disposed over the element on a side of the fourth storage electrode away from the fourth transfer electrode, the eighth transfer electrode overlapping the fourth storage electrode, and forming an eighth transfer area in the element adjacent to the fourth storage area,

a first channel including the first and second storage areas, the first, second, fifth and sixth transfer areas and the common transfer area,

a second channel including the third and fourth storage areas, the third fourth, seventh and eighth transfer areas and the common transfer area, and,

means for providing a first time-varying phased signal repetitiously alternating between opposite levels,

means for applying the first signal to the first and fourth storage electrodes and the third, fifth and sixth transfer electrodes,

means for providing a second time-varying signal of opposite phase from the first signal,

means for applying the second signal to the second and third storage electrodes and to the first, seventh, and eighth transfer electrodes,

means for providing a third signal consisting of a pulse of predetermined duration coinciding with alternate ones of the changes in level of the first and second signals,

means for applying the third signal to the second transfer electrode,

means for providing a fourth signal consisting of a pulse of selected duration coinciding with alternate ones of the changes in level of the first and second signals which are in between the alternate ones of the changes in level of the first and second signals with which the pulses of the third signal coincide, and

means for applying the fourth signal to the fourth transfer electrode,

whereby, the time-varying signals applied to the electrodes during each of a succession of transfer intervals transfers charge packets applied to the first and second channels along the first and second channels during the transfer interval.

4,237,390

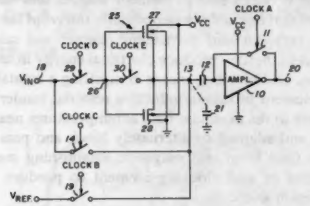
SWITCHING COMPARATOR

Gerald B. Buurma, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 28, 1978, Ser. No. 946,477

Int. Cl.³ H03K *5/24, 17/296*

U.S. Cl. 307—362 **8 Claims**



1. A switching comparator circuit having first and second inputs and an output responsive to the difference in input potentials, said circuit comprising:

amplifier means having an output terminal constituting said comparator output, an input terminal, and a trip point;

means for periodically forcing said amplifier means to said trip point;

capacitor means coupled between said amplifier means input terminal and a circuit node, said circuit node having appreciable stray capacitance;

means for alternately coupling said circuit node to said first and second inputs in synchronism with said means for periodically forcing said amplifier to said trip point whereby said output is a function of the difference in potential between said first and second inputs; and

means for isolating said node from one of said first and second inputs whereby the loading produced by said stray capacitance is reduced.

4,237,391

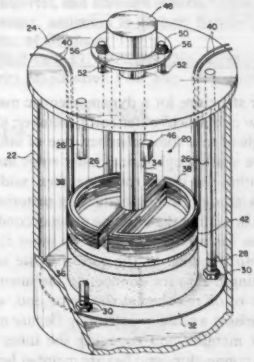
APPARATUS FOR PRODUCING ELECTRICAL ENERGY

Paul E. Schur, 74 Vaneck Dr., New Rochelle, N.Y. 10801, and Andrew I. Abolafia, Forest Hills, N.Y., assignors to Paul E. Schur, New Rochelle, N.Y.

Continuation of Ser. No. 566,090, Apr. 8, 1975, abandoned. This application Sep. 2, 1976, Ser. No. 719,978

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—10 **16 Claims**



1. An apparatus for producing electrical energy, comprising:

support means;

a permanent magnet supported by a first portion of said support means and establishing a magnetic field;

sensing means supported by a second portion of said support

means and mounted within and responsive to the magnetic field established by said permanent magnet and operable to produce electrical energy in response to changes in the magnetic field, said sensing means comprising a coil located within said magnetic field; and

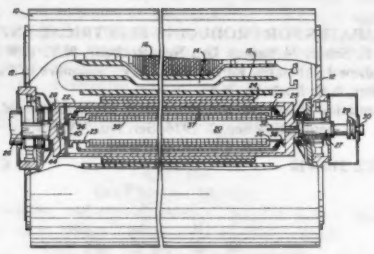
blocking means supported by a third portion of said support means between said permanent magnet and said sensing means and operable to periodically interrupt the magnetic field between said permanent magnet and said sensing means to thereby produce electrical energy in said sensing means, said blocking means comprising a rotatable blocking element of superconductive material rendered impermeable to the magnetic field at temperatures near absolute zero and adapted to alternately block and pass the magnetic field from said magnetic establishing means upon rotation of said blocking element to produce electrical energy in said coil.

4,237,392

ROTOR MEMBER FOR A SUPERCONDUCTING GENERATOR

Sui-chun Ying, Monroeville, Pa.; Joseph L. Smith, Jr., Concord, Mass., and Kai J. Baumann, Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 24, 1978, Ser. No. 936,421
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—52 **6 Claims**



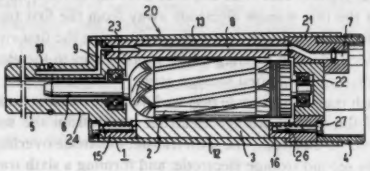
1. A rotor structure for a dynamoelectric machine comprising: a hollow cylindrical outer rotor member; shaft portions at opposite ends of said rotor member, one of said shaft portions being a drive shaft; a cylindrical inner rotor member disposed coaxially within the outer rotor member, said rotor member carrying a winding of superconducting material and including means for maintaining the winding at superconducting temperatures; means for rigidly attaching the inner rotor member to the outer rotor member at the end opposite said drive shaft; and connecting means for connecting the inner rotor member to the outer rotor member at the drive end, said connecting means comprising a radially-extending flexure member secured to the outer member and engaging the inner rotor member with a drive connection, said flexure member being a laminated circular structure having its outer periphery secured to the outer rotor member and having a central opening for receiving a portion of the inner rotor member, said connecting means being flexible in the axial direction to permit relative axial movement between the inner and outer rotor members and being torsionally stiff to transmit torque.

4,237,393

DRIVE MOTOR FOR A DENTAL HANDPIECE

Hermann Landgraf, Heppenheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 779,100, Mar. 18, 1977, abandoned. This application Nov. 21, 1978, Ser. No. 962,717
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2613061
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—59 **10 Claims**



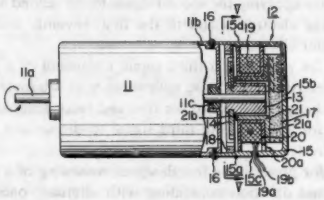
1. In a drive section for a dental handpiece having a housing with means for connection to a supply hose and means for connection to a grip section of a dental handpiece, said housing receiving a drive motor having a stator surrounding a rotor and at least one coolant line extending through the drive section in a direction parallel to the axis of the drive section, the improvements comprising said stator consisting of a hard metallic material with at least one stator section of a soft metallic material, each stator section comprising a portion of the circumference of the stator and extending the length thereof, and at least one stator section having means for receiving a portion of a coolant line, said means for receiving being a passageway extending through the one stator section for the entire length thereof.

4,237,394

FREQUENCY GENERATOR AND MINIATURE MOTOR PROVIDED WITH THE SAME

Kanemasa Aoki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha and Canon Seiki Kabushiki Kaisha, both of Tokyo, Japan

Filed May 19, 1978, Ser. No. 907,609
Claims priority, application Japan, May 23, 1977, 52-66219[U]; Mar. 8, 1978, 53-26186
Int. Cl.³ H02K *47/04*
U.S. Cl. 310—113 **39 Claims**



1. A frequency generator comprising:

(a) a magnetically conductive casing in a shape of cup having a cylinder part and a bottom part;

(b) a permanent magnet having a first flat surface and a second flat surface magnetized in such manner that the first magnetic pole of the permanent magnet is at the side of the first flat surface and the second magnetic pole is at the side of the second flat surface and disposed within the inner space of said casing with its first flat surface being connected with the bottom part of said casing;

(c) a magnetically conductive frame having a flange part and

a cylinder part with its flange part being connected with the second flat surface of said permanent magnet;

(d) a power generation coil disposed in the space existing between the cylinder part of said casing and the cylinder part of said frame;

(e) a magnetically conductive rotor at least a portion of which is received rotatably within the cylinder part of said frame;

(f) a first group of magnetically conductive projections supported on a portion of said rotor outside of the cylinder part of said frame so as to be rotatable with said rotor; and

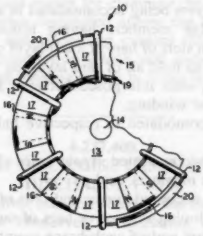
(g) a second group of magnetically conductive projections supported on a portion of the cylinder part of said casing so as to face the rotation path of said first group of projections.

4,237,395

ELECTRIC DYNAMOTOR

Billy E. Loudermilk, 310 Madison Ave., P.O. Box 1168, Cape Canaveral, Fla. 32920

Filed Oct. 30, 1978, Ser. No. 956,063
Int. Cl.³ H02K *47/04*
U.S. Cl. 310—113 **12 Claims**



1. An electric dynamotor machine comprising in combination:

a motive hub having an axial shaft of rotation attached thereto;

a plurality of annular motive coils each defining a void therein, with each of said coils coupled in sequential registration about the circumference of said motive hub;

a ring-shaped rotor encircling said hub and communicating through said voids within each of said motive coils, said rotor including a plurality of permanent magnets arranged sequentially about the circumference of said rotor with like poles adjacent each other;

counter-rotation means operatively coupled between the plurality of said motive coils and said rotor for rendering said rotor movable only in a direction opposite to the rotation of said motive coils and said hub;

commutator means operatively coupled between a source of electrical energy and said motive coils for periodically energizing selected ones of said motive coils in proper polarity; and

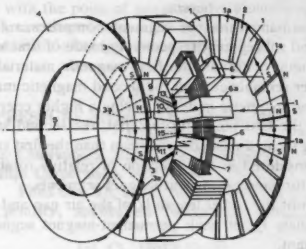
a plurality of generator coils operatively juxtaposed with the circumference of said rotor for cutting the magnetic lines of flux emanating from said permanent magnets therein so as to generate an induced voltage at an output thereof responsive to the relative motion between said generator coils and said permanent magnets.

4,237,396

ELECTROMAGNETIC MACHINES WITH PERMANENT MAGNET EXCITATION

Philip T. Blenkinsop, Melbourn; Graham W. McLean, Lyme, and David Turner, Haslingfield, all of England, assignors to P A Management Consultants Limited, London, England

Filed Sep. 29, 1978, Ser. No. 947,046
Claims priority, application United Kingdom, Oct. 6, 1977, 41539/77; Oct. 6, 1977, 41541/77; Oct. 6, 1977, 41542/77
Int. Cl.³ H02K *21/26, 1/22*
U.S. Cl. 310—154 **5 Claims**



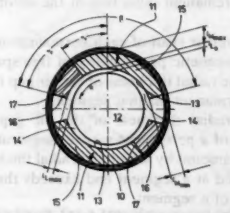
1. An electromagnetic machine having a first array of magnets, a magnetic path between pairs of magnets in the first array, a second array of permanent magnets arranged parallel to the first array, a magnetic path between pairs of the magnets in the second array, an array of pole pieces arranged between the first and second arrays of permanent magnets, the first and second arrays of magnets and the array of pole pieces being movable relative to one another and coil means arranged to magnetise the pole pieces, the arrangement being such that a magnetic path can be provided between a pair of magnets in the first array and a pair of magnets in the second array via a pair of the pole pieces in which the magnetic path between magnets in each of the said first and second arrays of magnets comprises a backing member of magnetisable material which is laminated at least in the direction of the magnetic path between the pairs of the magnets in the said arrays and in which adjoining pole pieces are radially inwardly and outwardly relatively displaced.

4,237,397

ELECTRIC MACHINE, ESPECIALLY SMALL MOTOR

Adolf Mohr, Bühlertal, and Rainer Corbach, Olfen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 17, 1979, Ser. No. 85,513
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845264
Int. Cl.³ H02K *21/26*
U.S. Cl. 310—154 **2 Claims**



1. An improved electric machine, of the type comprising an armature,

a permanent-magnet field magnet system including at least

two diametrically located permanent-magnet segments each of generally arcuate configuration,

each permanent-magnet segment having two ends and a middle located midway between the two ends and having a radial thickness which decreases proceeding from the middle towards each of the two ends,

each permanent-magnet segment defining together with the armature a radial air gap whose radial length increases proceeding from the middle of the respective segment towards each of the two ends in correspondence to the radial-thickness decrease in the segment,

the improvement wherein:

each permanent-magnet segment comprises a first and a second subsegment respectively made of first and second magnetic materials, the first magnetic material having a higher remanence than the second magnetic material, the second magnetic material having a higher coercive force than the first magnetic material, the second subsegment being located more downstream than the first subsegment as considered in the direction of relative rotation of the armature and permanent-magnet segments,

the sum of the radial length l_L of the air gap and the radial thickness l_M of each permanent-magnet segment being constant,

the radial thickness l_{Mmin} of each permanent-magnet segment at each of the two ends thereof being

$$l_{Mmin} = \frac{w \cdot I_e}{H_{G2}} \cdot \frac{\beta/2}{90} + l_{Lmax}\left(\frac{B_{r2}}{\mu_o \cdot H_{G2}} - 1\right)$$

the two subsegments of each permanent-magnet segment adjoining each other at a junction location which is spaced from the middle of the respective permanent-magnet segment by an angular distance α_1 such that

$$\alpha_1 = \frac{(l_L + l_M)\left(H_{G1} - \frac{B_{r1}}{\mu_o} l_{Lo}\right)}{\frac{w \cdot I_e}{90} + \frac{B_{r1}}{\mu_o} \cdot \frac{\Delta l_L}{\beta/2}}$$

wherein:

$w \cdot I_e$ = the armature quadrature mmf of the motor,

H_{G2} = the field intensity up to which the second magnetic material can be demagnetized without undergoing irreversible demagnetization,

B_{r2} = the remanent induction of the second magnetic material,

β = the angular span of each permanent-magnet segment,

μ_o = the magnetic permeability of free space,

l_{Lmax} = the radial thickness of the air gap measured at an end of a permanent-magnet segment,

l_{Lo} = the radial thickness of the air gap measured at the middle of a permanent-magnet segment,

Δl_L = the amount by which the radial thickness of the air gap measured at a segment end exceeds that measured at the middle of a segment,

H_{G1} = the field intensity up to which the first magnetic material can be demagnetized without undergoing irreversible demagnetization, and

B_{r1} = the remanent induction of the second magnetic material,

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STATOR CONSTRUCTION

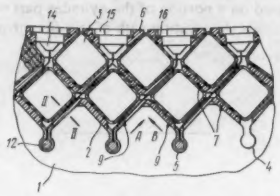
Alexandr A. Chigirinsky, ulitsa Kuibysheva, 11, kv. 8; Vladimir G. Danko, bulvar Ivana Karkacha, 2, kv. 89; Nikolai G. Grinchenko, ulitsa Vatutina, 16/25; Ivan Y. Cheremisov, bulvar Ivana Karkacha, 2, kv. 81; Roman I. Tretevich, prospekt Kosiora, 126, kv. 61, and Galina V. Penkina, prospekt Kosiora, 107, kv. 10, all of Kharkov, U.S.S.R.

Filed Nov. 16, 1978, Ser. No. 961,393

Claims priority, application U.S.S.R., Dec. 22, 1977, 2558752

Int. Cl.³ H02K *3/48*

U.S. Cl. 310—214 **7 Claims**



1. A stator of an electrical machine, separated by an air gap from a rotor, comprising:

a core of said stator having slots of a triangular cross-section and half-closed axial slots;

a multilayer bar winding, bars of adjacent layers being staggered and adjoining one another on two sides, bars of a first layer being partially received in said slots of said stator and partially received in said air gap, and bars of remaining layers being accomodated in said air gap;

insulating wedge members having holes and being accomodated in slots of bars of a last layer of said multilayer bar winding to hold all of said layers in place;

spacers having slots interposed between said bars of said multilayer bar winding;

first rollers accomodated in respective half-closed slots of said stator;

second rollers accomodated in said holes of respective insulating wedge members; and

brace members accomodated in said slots of respective spacers and enveloping respective bars of said multilayer bar winding, a first end of each brace member enveloping a respective first roller, and a second end of each brace member enveloping a respective second roller.

4,237,399

DRIVING CIRCUIT FOR PIEZO-ELECTRIC MULTIMORPH TRANSDUCER

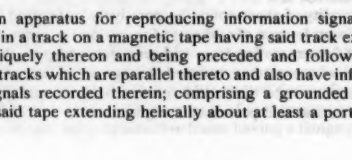
Hitoshi Sakamoto, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 959,447

Claims priority, application Japan, Dec. 29, 1977, 52/158187

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—317 **13 Claims**



1. An apparatus for reproducing information signals recorded in a track on a magnetic tape having said track extending obliquely thereon and being preceded and followed by similar tracks which are parallel thereto and also have information signals recorded therein; comprising a grounded guide drum, said tape extending helically about at least a portion of

the periphery of said guide drum and being adapted to be longitudinally advanced, at least a portion of said guide drum being rotatable; transducer means movable along said track for reproducing the information signals recorded therein; transducer mounting means including a bi-morph leaf which is cantilevered at one end and carries said transducer means at the other end which is free to deflect in the direction transverse to the length of said track, said bi-morph leaf having a pair of electrically poled piezo-electric elements interposed between inner and outer electrodes with each of said elements being bonded to the other at the respective inner electrode, and with said elements being oppositely poled, said bi-morph leaf being mounted at said outer electrode of one of said piezo-electric elements on said rotatable portion of the guide drum so as to rotate with the latter and thereby scan along the one of the tracks positioned in proximity thereto by advancement of the tape; and a drive circuit for said bi-morph leaf including a source of AC drive voltage connected across said outer electrodes of said piezo-electric elements, respectively, for deflecting said transducer means in said transverse direction, said outer electrode of said one piezo-electric element being connected to ground and said source of the drive voltage being connected between the outer electrode of the other of said piezo-electric elements and said ground, first means for clamping, at a predetermined maximum value, the voltage at the bonded together inner electrodes at least in response to a polarity of said drive voltage opposed to the direction in which one of said piezo-electric elements is poled, and second means for clamping, at said relatively small maximum value, the voltage at said bonded together inner electrodes in response to the polarity of said drive voltage opposed to the direction in which the other of said piezo-electric elements is poled, in which each said first and second means for clamping the voltage includes unidirectional means connected across the respective piezo-electric element and permitting current flow in a direction opposed to the direction in which said respective element is poled, and voltage limiting means in series with said unidirectional means.

4,237,400

LOW-PRESSURE DISCHARGE LAMP WITH TORTUOUS DISCHARGE PATH

Gustaaf A. Wesselink; Hendrik Roelofs, and Cornelis H. M. Van Bommel, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,587

Claims priority, application Netherlands, Mar. 8, 1978, 7802511

Int. Cl.³ H01J *61/10, 61/30*

U.S. Cl. 313—204 **4 Claims**

1. A low-pressure discharge lamp having a discharge space limited by an elongate lamp vessel, first and second electrodes disposed at one end of said vessel, an ionizable medium in said vessel, means for directing a discharge between said first and second electrodes and repetitively between the ends of said vessel, said means for directing including said lamp vessel having at least one partition therein which divides the discharge space into chambers each extending substantially the length of the lamp vessel, said chambers communicating with one another through an opening at least partly formed in each of the partitions, each successive opening between two chambers being disposed at a different end, at least one opening being located at the end of the vessel remote from the electrodes and has a wedge-shaped portion extending towards the electrodes with the point of minimum thickness of the wedge located near an electrode as a result of which the discharge path extends itself after ignition of the lamp.

4,237,401

LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

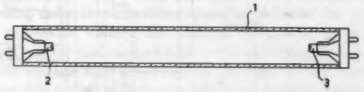
Winston D. Couwenberg, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,368

Claims priority, application Netherlands, Nov. 2, 1977, 7712058

Int. Cl.³ H01J *61/20*

U.S. Cl. 313—225 **1 Claim**



1. A low-pressure mercury vapor discharge lamp which comprises:

a discharge vessel;

at least two thermally emitting electrodes, mercury, at least one rare gas, and between 0.005 and 0.05 mg/cm³ of mercury iodide being disposed in said discharge vessel; and

said discharge vessel having a glass wall which is permeable to ultra-violet radiation generated in the mercury discharge.

4,237,402

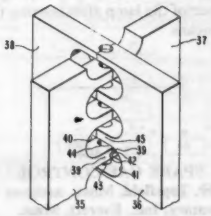
SLOW-WAVE CIRCUIT FOR TRAVELING-WAVE TUBES

Arthur Karp, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 26, 1979, Ser. No. 23,923

Int. Cl.³ H01J *25/34*

U.S. Cl. 315—3.5 **13 Claims**



1. A slow-wave circuit for a traveling-wave tube comprising:

a linear passageway extending in the direction of wave propagation;

a number of integral metallic comb-shaped conducting elements with similar pitches arranged in two sets;

means for supporting said combs such that in each set the longitudinal axis of each comb extends in said direction, the teeth of each comb project toward said passageway, and tips of said teeth adjacent said passageway are registered along said direction;

the teeth of one of said sets extending in directions at substantial angles to the teeth in the other of said sets and being spaced along said passageway to align with the spaces between teeth of said other set.

4,237,403

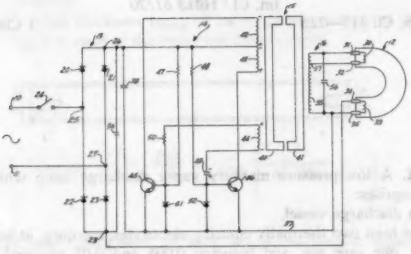
POWER SUPPLY FOR FLUORESCENT LAMP

Forrest W. Davis, San Luis Obispo, Calif., assignor to Berkleonics, Inc., San Luis Obispo, Calif.

Continuation-in-part of Ser. No. 860,597, Dec. 14, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,322

Int. Cl.³ H05B *41/30, 41/392*

U.S. Cl. 315—98 **31 Claims**



1. A lighting system comprising:

a source of electrical power;

means for converting the electrical power from the source into rectangular waves;

a parallel tank circuit resonant near the fundamental or a harmonic of the frequency of the rectangular waves;

a fluorescent lamp having first and second electrodes, the lamp having high impedance while starting and low impedance after starting;

means for connecting the tank circuit between the first and second electrodes of the lamp; and

means for magnetically coupling the converting means to the tank circuit to apply the electrical power across the first and second electrodes of the lamp, the coupling means having sufficiently loose coupling to prevent the low impedance of the lamp after starting from loading the converting means.

4,237,404

SPARK GAP CONTROL

Rudolf Limpaecher, Topsfield, Mass., assignor to Avco Everett Research Laboratory, Inc., Everett, Mass.

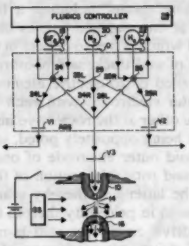
Filed May 18, 1979, Ser. No. 40,197

Int. Cl.³ H01J *7/24;* **H05B** *31/26*

U.S. Cl. 315—111 **9 Claims**

1. In a high frequency, cyclic (over 1000 Hz) arc/recovery spark gap process, the improvement comprising:

injecting multiple control gases of different compositions into the spark gap region under fluidic switching control at different times during the arc/recovery cycles, a first one of said control gases being selected to elevate spark gap breakdown voltage to enhance recovery and a second



one of said gases being selected to depress spark gap breakdown voltage and enhance triggering.

4,237,405

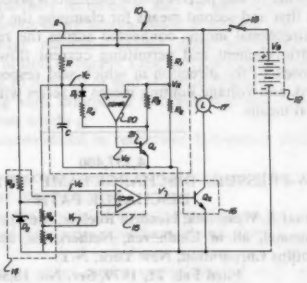
METHOD AND APPARATUS FOR CONSERVING ENERGY

James T. Kellis, Tustin, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Mar. 10, 1978, Ser. No. 885,392

Int. Cl.³ G05F *1/00;* **H05B** *37/02, 39/04, 41/36*

U.S. Cl. 315—307 **11 Claims**



1. Apparatus for regulating the light output of an electrical lamp comprising

a power source having a nominal output voltage V_B exhibiting a decreasing output voltage with time,

a lamp adapted to be coupled to the source to be energized and de-energized therefrom, the lamp having a voltage rating substantially equivalent to a preselected voltage level lower than said V_B voltage level,

a source of reference potential adapted to be coupled to the power source for providing a first reference potential V_T of substantially constant amplitude when energized therefrom,

means for generating an oscillating signal having a preselected wave shape and a fixed frequency, said means comprising voltage storage means coupled in parallel circuit relationship with said power source to be charged from said source and second reference voltage means coupled in parallel circuit relationship with said source for providing a pair of reference voltage signals βV_B and αV_B wherein α and β are fixed percentages of the power source output voltages and V_B is representative of the power source output voltages and β is a value a preselected amount higher than α, said oscillating signal generating means comprising

first means for sensing the relative amplitudes of the voltage stored on said voltage storage means and said reference voltages βV_B and αV_B for switching the second reference

voltage means to said αV_B potential when the voltage storage means exceeds the amplitude of said βV_B reference potential and for discharging the voltage stored in said voltage storage means and for sensing when the amplitude of the voltage stored in said voltage storage means has discharged to a value that is lower than said αV_B reference potential for switching the reference voltage means to said βV_B reference potential and for charging the voltage storage means to thereby sequentially charge and discharge the voltage storage means between βV_B and αV_B in a fixed time interval, regardless of the actual value of V_B to thereby obtain an oscillating signal of a fixed frequency, and

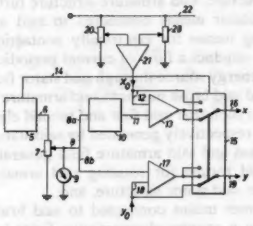
second means for sensing the relative amplitudes of said first reference potential V_T and said oscillating signal for providing pulses having pulse widths that vary in an inverse square relationship with the source voltages V_B, and switching means coupled between the lamp and the power source and coupled to responsive to the output pulses from said second means for switching the power source to the lamp on and off at a preselected rate, the pulses having heights varying with the output voltages from said source.

4,237,406

EQUIPMENT FOR USE IN MEASURING THE DISTANCE BETWEEN DIFFERENT POINTS DISPLAYED ON A FLUORESCENT SCREEN

Carl Kretz, Zipf, Austria, assignor to Kretztechnik Gesellschaft m.b.H., Zipf, Austria

Filed Jul. 16, 1979, Ser. No. 57,678
Claims priority, application Austria, Oct. 6, 1978, 7195/78
Int. Cl.³ G01R *13/30*
U.S. Cl. 315—377 **27 Claims**



1. Equipment for controlling the tracing of a center mark and of an arc of a circle centered on said mark on a fluorescent screen, comprising

a control knob,

a first controller adapted to deliver a first deflecting voltage, which determines the x coordinate of said mark, and operable by said knob to effect coarse and fine adjustments of said first deflecting voltage,

a second controller adapted to deliver a second deflecting voltage, which determines the y coordinate of said mark, and operable by said knob to effect coarse and fine adjustments of said second deflecting voltage,

change-over means for conditioning said first and second controllers for said coarse and fine adjustments, and

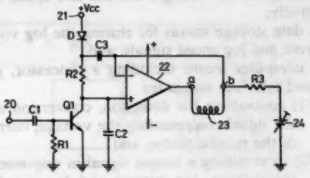
a third controller controlling the radius of said circle.

4,237,407

VERTICAL DEFLECTION CIRCUIT FOR A CAMERA TUBE IN A TELEVISION CAMERA

Sumio Yokokawa, Yokohama, and Yasuaki Watanabe, Kasukabe, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jan. 18, 1979, Ser. No. 4,599
Claims priority, application Japan, Jan. 20, 1978, 53-4849
Int. Cl.³ H01J *29/70, 29/72*
U.S. Cl. 315—389 **2 Claims**



1. A vertical deflection circuit of a camera tube in a color television camera in which said camera tube is provided with an optical filter having an optically black part extending in parallel with a beam scanning direction of the camera tube, said vertical deflection circuit comprising: a circuit for generating a saw-tooth voltage for vertical deflection; a vertical deflection coil for said camera tube; a circuit for supplying said saw-tooth voltage thus generated to one end of said vertical deflection coil in DC coupling; a reference voltage source for applying a reference voltage to the other end of said vertical deflection coil

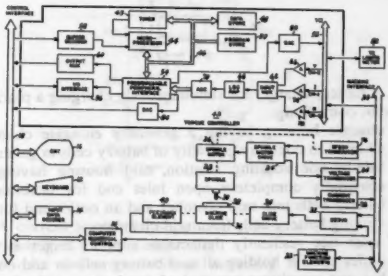
so that one end of a vertical deflection width corresponds to the black part of said optical filter; and a bootstrap circuit adapted to improve linearity of the waveform of said saw-tooth voltage.

4,237,408

METHOD AND APPARATUS FOR MODIFYING THE OPERATION OF A MACHINE TOOL AS A FUNCTION OF TORQUE

Thomas R. Frecka, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Aug. 10, 1979, Ser. No. 65,583
Int. Cl.³ G05B *19/24*
U.S. Cl. 318—571 **12 Claims**



1. An apparatus for modifying the operation of a machine tool as a function of the torque load on a rotating cutting tool caused by the cutting tool being in contact with a workpiece, the said machine tool having a spindle motor for rotating the cutting tool and a feed motor for providing relative motion between the tool and the workpiece in response to command signals from a numerical control, the apparatus comprising:

(a) means responsive to the spindle motor for producing a

voltage signal representing a spindle motor voltage magnitude occurring within a range of two decades;

(b) means responsive to the spindle motor for producing a current signal representing a spindle current magnitude occurring within a range of four decades;

(c) means responsive to the spindle motor for producing a speed signal representing a spindle motor velocity occurring within a range of three decades;

(d) means responsive to the voltage, current and velocity signals for generating corresponding log voltage, log current and log speed signals representing logarithmic values of the voltage, current and speed signals respectively;

(e) data storage means for storing the log voltage, log current and log speed signals; and

(f) computer means including a processor, program store and interface means for

(1) controlling the detection, conversion and storage of the signals representing the voltage, current and speed of the spindle motor, and

(2) determining a torque signal in response to the stored log voltage, log current and log speed signals, said torque signal representing a spindle motor torque being generated within a range of five decades, and

(3) providing a control signal to the numerical control in response to the torque signal exceeding a predetermined reference torque signal.

4,237,409

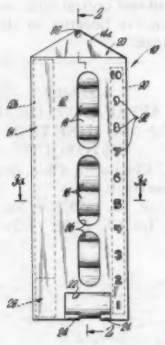
MULTIPLE-BATTERY BATTERY CHARGER

Raymond K. Sugalski, Gainsville, Fla., assignor to General Electric Company, Gainsville, Fla.

Filed May 4, 1978, Ser. No. 902,671

Int. Cl.[3] H01M *10/46*

U.S. Cl. 320—2 **14 Claims**



1. A battery charger for simultaneously charging a plurality of cells, comprising:

a charger housing having a generally elongate chamber adapted to contain a plurality of battery cells in generally side-by-side abutting relation, said housing having an essentially completely open inlet end for introducing battery cells into said chamber and an outlet end for removing battery cells from said chamber;

at least one resiliently deflectable support finger at said outlet end for holding all said battery cells in said chamber, yet permitting removal of one battery cell adjacent said outlet end when desired by resiliently yielding when said one battery cell is pulled from said outlet end; and

electrically conductive means in said housing for connection to a source of charging current, said conductive means including portions that are positioned along opposite sides of said chamber to supply current, in parallel, to battery cells in said housing, such that any desired number of battery cells may be charged by insertion into said housing through said inlet end and charged when said conductive means are connected to a power source, and, charged cells may be removed from said housing through said outlet.

4,237,410

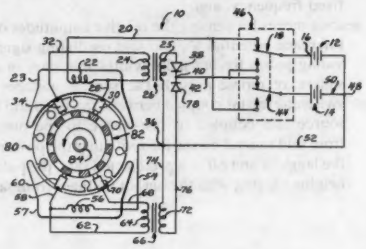
REGENERATIVE ELECTRIC MOTOR

Alfred C. Erickson, 329 Black Oak Dr., Michigan City, Ind. 46363, and Clyde W. Erickson, Box 184, Sperry, Iowa 52650

Filed Oct. 23, 1978, Ser. No. 953,795

Int. Cl.[3] H02P *7/06*; H02J *7/00*

U.S. Cl. 320—14 **15 Claims**



1. An electric motor for converting electrical energy from a primary energy source into mechanical energy while simultaneously utilizing counter-electromotive force developed during motor operation to provide a secondary source of energy, said electric motor comprising:

(a) a stator structure including a stator field generating means for receiving current from the primary energy source and for generating a first electromagnetic field in response to the flow of current so received;

(b) a brush means connected to said stator field generating means for receiving current therefrom;

(c) an armature structure mounted for rotation relative to said stator structure, said armature structure including an armature field generating means energizible by a current flow to generate a second electromagnetic field which interacts with said first electromagnetic field to create a torque for rotating said armature structure relative to said stator structure, said armature structure further including a commutator means connected to said armature field generating means for electrically contacting said brush means to conduct a flow of current periodically from the primary energy source through said stator field generating means and said brush means to said armature field generating means such that said first and second electromagnetic fields are respectively generated by said stator field generating means and said armature field generating means to create said torque for rotating said armature structure relative to said stator structure, and;

(d) transformer means connected to said brush means for generating a counter-electromotive force in response to the periodic flow of current through said brush means and for converting the counter-electromotive force so generated to an output voltage.

4,237,411

CHARGE MAINTENANCE AND CONTINUOUS CHARGING FOR STORAGE BATTERIES

Hans K. Köthe, Kelkheim, and Günter Strasen, Neu-Isenburg, both of Fed. Rep. of Germany, assignors to Varta Batterie, A.G., Hanover, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,231

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748644

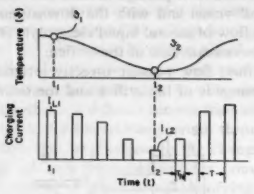
Int. Cl.[3] H02J *7/04*

U.S. Cl. 320—21 **7 Claims**

1. A method of charge maintenance and continuous charg-

ing of storage batteries, and particularly of nickel cadmium batteries with sinter plates, through periodic supplying of charge quantities with predetermined programmed relationships, the method comprising

supplying to the storage battery at predetermined substantially uniform intervals T a current I_L lasting for an also predetermined substantially uniform after-charge period T_N, the intensity of said current being determined by the prevailing storage battery temperature ν so as to increase with increasing temperature and decrease with decreasing temperature.

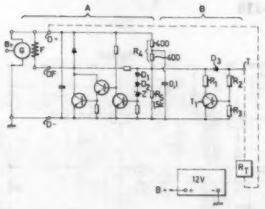


4,237,412

VOLTAGE REGULATOR FOR A GENERATOR

Lars N. Rundlöf, Västra Frölunda, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Mar. 2, 1978, Ser. No. 882,897
Claims priority, application Sweden, Mar. 9, 1977, 7702656
Int. Cl.³ H02J 7/14
U.S. Cl. 322—28 **4 Claims**



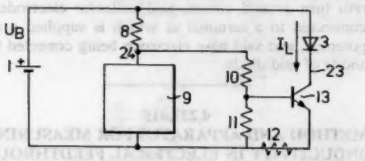
1. A voltage regulator for a generator of the type used in motor vehicles, the regulator being adapted to set, in use, the generator at a charging voltage when charging a storage battery, the regulator comprising a voltage divider (R_4, R_5) having a pair of branches for sensing the voltage of a generator (G) and comparing such voltage with a reference voltage (Z); switch means (T_1); an additional voltage divider element (R_1) connected in one branch (R_5) of the first-mentioned voltage divider (R_4, R_5) through said switch means (T_1) and only when said switch means (T_1) is rendered operative; terminal means (T) for connecting a regulator element (R_7) in the other branch (R_4) of said first-mentioned voltage divider (R_4, R_5); and means (R_2, R_3) for rendering operative said switch means (T_1) to connect said additional voltage divider element (R_1) in said one branch (R_5) of the voltage divider, only when a said regulator element (R_7) is connected to said terminal means (T).

4,237,413

CIRCUIT ARRANGEMENT FOR STABILIZING A DIRECT CURRENT

Bernhard Rall, Ulm, and Dietrich Höppner, Wippingen, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 20, 1977, Ser. No. 834,865
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1976, 2642512
Int. Cl.³ G05F 1/56
U.S. Cl. 323—4 **14 Claims**



1. A direct current stabilization circuit for maintaining the current through a load constant with varations in a D.C. supply voltage source, comprising

a first transistor having its emitter-collector electrodes connected in series with said load, said first transistor and said load being coupled across said voltage source,

current control means comprising first and second series-connected resistors and a second transistor having base, emitter and collector electrodes, said second transistor having its base electrode connected to the junction of said first and second resistors and its other electrodes coupled to the other ends of said first and second resistors,

a third resistor having one end coupled to the other end of said first resistor and the other end thereof to one terminal of said voltage source, and,

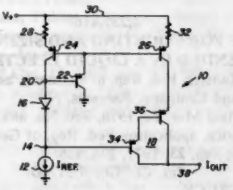
non-rectifying resistive means coupling the other end of said first resistor to the base electrode of said first transistor, the other end of said second resistor being coupled to the other terminal of said voltage source.

4,237,414

HIGH IMPEDANCE OUTPUT CURRENT SOURCE

Marc T. Stein, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 8, 1978, Ser. No. 967,823
Int. Cl.³ G05F 1/56
U.S. Cl. 323—4 **2 Claims**



1. A current source for supplying current at a high impedance output to a load, comprising:

a current turn around circuit including first and second transistors each having an emitter, collector and base electrode, each of said emitter electrodes being coupled to a terminal at which is supplied a first potential level, said base electrodes being interconnected to each other;

a diode having an anode and cathode, said anode being coupled to said collector electrode of said first transistor;

means for supplying a reference current, said reference current means having an electrode connected to said cathode of said diode;

output means including first and second PNP transistors connected in a Darlington amplifier configuration with the base electrode of said first PNP transistor being connected to said cathode of said diode, the emitter of said second PNP transistor being connected to said collector electrode of said second transistor of said current turn around circuit, and the collectors of said first and second PNP transistors being interconnected with the output of the current source; and

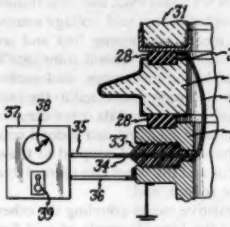
a third transistor having base, emitter and collector electrodes, said emitter electrode being connected to said base electrodes of said first and second transistors of said current turn around circuit, said collector electrode being connected to a terminal at which is supplied a second potential, and said base electrode being conected to said anode of said diode.

4,237,415

METHOD AND APPARATUS FOR MEASURING CONDUCTIVITY IN ELECTRICAL FEEDTHROUGH

John K. Easley, Pittsfield, Mass., assignor to General Electric Company, New York, N.Y.

Filed Nov. 13, 1978, Ser. No. 959,687
Int. Cl.³ G01R *31/12*
U.S. Cl. 324—54 **2 Claims**



1. A method for measuring the current through a conductive coating on a porcelain bushing jacket comprising the steps of:

providing an insulated electrical feedthrough intermediate the ends of the jacket and connected at one end to the conductive coating;

connecting the feedthrough at the other end to one side of a current reading ammeter; and

connecting the other side of the ammeter to ground.

4,237,416

APPARATUS FOR COUNTING AND SIZING PARTICLES SUSPENDED IN A LIQUID ELECTROLYTE

Tibor Zöld, Munster, Fed. Rep. of Germany, assignor to Becton Dickinson and Company, Paramus, N.J.

Filed Mar. 22, 1978, Ser. No. 888,899
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712360; Sep. 23, 1977, 2742838
Int. Cl.² G01N *27/00*
U.S. Cl. 324—71 CP **34 Claims**

1. An apparatus for counting and sizing particles suspended in a liquid electrolyte, comprising, in combination:

(1) a first vessel for first liquid electrolyte having particles to be counted and sized suspended therein;

(2) a second vessel for particle-free second liquid electrolyte;

(3) a first electrode immersed in the first liquid electrolyte;

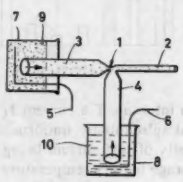
(4) a second electrode immersed in the second liquid electrolyte;

(5) an orifice having upstream and downstream sides and constituting a first particle-observing location in fluid flow connection on its upstream side with the first vessel and sized to allow one particle at a time to pass therethrough; the passage of a particle through the orifice being sensed as a change in electrical resistance at the orifice and measured at the electrodes;

(6) a first fluid flow passage connecting the first vessel with the upstream side of the orifice for flow of first liquid electrolyte from the vessel to the orifice;

(7) a second fluid flow passage in fluid flow connection with the second vessel and with the downstream side of the orifice or flow of second liquid electrolyte from the vessel to the downstream side of the orifice;

(8) a third fluid flow passage directly interconnecting the downstream side of the orifice and the second fluid flow



passage with a second-particle-observing location for carrying first and second liquid electrolyte and particles away from the orifice to the second particle-observing location; and sized throughout its length to carry the particles in the same sequence of flow as that in which they pass through the orifice to facilitate observation in that order at the second particle-observing location; and

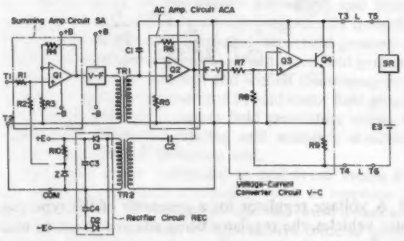
(9) means for drawing first and second liquid electrolyte and particles in the third fluid flow passage from each of the first vessel through the orifice and the second vessel to the second particle-observing location.

4,237,417

SIGNAL TRANSMISSION APPARATUS OF TWO-WIRE TYPE

Akikazu Nishikawa, Kiyose, Japan, assignor to Kenki Kagaku Keiki Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 963,760
Claims priority, application Japan, Apr. 18, 1978, 53/45602
Int. Cl.³ G01R *27/02*
U.S. Cl. 324—118 **2 Claims**



1. A signal transmission apparatus of two-wire type, comprising a transmitting circuit which receives a DC voltage to be detected or to be measured as an input signal and generates an output signal which represents the magnitude of the input signal, a receiving circuit including a device for indicating or recording the magnitude of the output signal sent from the transmitting circuit and a DC power source connected in series with said device, and a two-wire transmission line connecting the transmitting circuit and the receiving circuit to transmit the output signal from the transmitting circuit to the receiving circuit and also to transmit energizing DC power from the receiving circuit to the transmitting circuit, characterized in that said transmitting circuit comprises a voltage-frequency

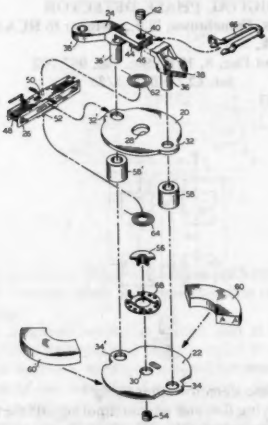
converter which is supplied with a DC input signal voltage and generates an alternating current having a frequency proportional to the magnitude of the input signal voltage; an AC amplifier circuit coupled to the output of said voltage-frequency converter through a first insulating transformer to amplify the AC output of the voltage-frequency converter; a frequency-voltage converter coupled to the output of said AC amplifier circuit to generate a DC voltage having a magnitude proportional to the frequency of the amplified AC output of the AC amplifier circuit; a voltage-current converter circuit coupled to the output of said frequency-voltage converter, and changes the magnitude of a direct current transmitted from the receiving circuit to the transmitting circuit through said two-wire transmission line, in response to the changes in the DC output voltage of said frequency-voltage converter; and a rectifier circuit having at least a pair of rectifying elements and being coupled to the output of said AC amplifier circuit through a second insulating transformer to rectify a portion of the amplified AC output of the AC amplifier circuit and to supply operating DC power to said voltage-frequency converter.

4,237,418

ELECTRICAL CURRENT INDICATING METER

Carl F. Van Bennekom, Green Valley, Ariz.; Donald E. Rogers, Lynn, and Edward F. Scannell, Saugus, both of Mass., assignors to General Electric Company, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 948,173
Int. Cl.³ G01R *1/20*
U.S. Cl. 324—150 **5 Claims**



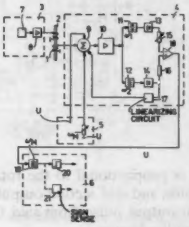
1. In an electrical current indicating meter mechanism having an inner and outer parallel flux plate, a pair of pivots, a rotor assembly having a coil surrounding said inner flux plate, said rotor assembly being mounted for rotational movement in the same plane as the inner flux plate, a pair of bearings, at least one permanent magnet positioned on said outer flux plate and means for supplying current to the coil of the rotor assembly, wherein the improvement comprises two spacer posts, a unitary frame member molded from an organic polymeric material having a pair of parallel projecting studs for securing thereto the inner and outer parallel flux plates separated by the two spacer posts mounted on said studs, said rotor assembly being mounted for rotation on said pair of pivots with one of said pivots extending to the bearing affixed to the frame member and the other pivot extending to the bearing affixed to the outer flux plate.

4,237,419

METHOD AND APPARATUS FOR NON-DESTRUCTIVE TESTING USING A PLURALITY OF FREQUENCIES

Bengt H. Törnblom, and Torborg M. Törnblom, both of Västeras, Sweden, assignors to Tornbloms Kvalitetskontroll AB, Västeras, Sweden

Filed Jun. 7, 1978, Ser. No. 913,313
Int. Cl.³ G01N *27/82*; G01R *33/12*
U.S. Cl. 324—225 **24 Claims**



1. A method of testing a conductive article using a test probe having a variable physical relationship to said article comprising:

applying an alternating magnetic field having at least first and second different frequencies to said article from said test probe;

sensing at least one electrical quantity responsive to said variable physical relationship having first and second components responsive to said first and second different frequencies respectively;

cyclically electrically adding a third component to said first component to produce a fifth component and cyclically electrically adding a fourth component to said second component to produce a sixth component, said fifth and sixth components being effective to cyclically electrically simulate a change in a physical relationship related to said variable physical relationship whereby testing results are obtained regardless of said variable physical relationship;

detecting said fifth and sixth components to produce first and second detected components;

subtracting one of said first and second detected components from the other thereof to produce an output signal; and said output signal containing information about a change in said article

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4,237,420

TEMPERATURE SENSING CIRCUIT

Heihachiro Ebihara; Fukuo Sekiya, and Misao Uchino, all of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Oct. 18, 1978, Ser. No. 952,513
Claims priority, application Japan, Oct. 25, 1977, 52-129930
Int. Cl.³ H03K *3/284*; G05D *23/20*
U.S. Cl. 328—3 **3 Claims**

1. A temperature sensing circuit comprising:

a temperature sensor multivibrator for producing output pulses having a pulse width that varies with temperature;

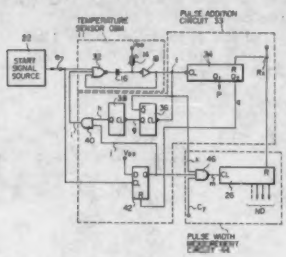
a source of start pulses for triggering said temperature sensor multivibrator to produce a first output pulse after each of said start pulses;

circuit means for producing a retrigger pulse to retrigger said temperature sensor multivibrator after each of said first output pulses has ended, to produce at least a single second output pulse consecutive with said first output pulse;

pulse addition means for producing an output signal having a duration equal to the sum of the durations of said first and second output pulses from said temperature sensor multivibrator;

a source of clock pulses; and

a pulse width measurement circuit responsive to said output signal from said pulse addition means for counting said clock pulses, to thereby produce a digital output signal



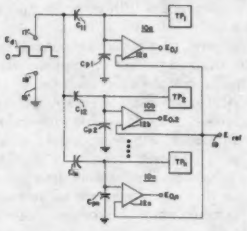
whose value is proportional to the total duration of said first output pulse and said second output pulse consecutive with said first output pulse from said temperature sensor monostable multivibrator.

4,237,421

SINGLE-ELECTRODE CAPACITANCE TOUCHPAD SENSOR SYSTEMS

Wesley K. Waldron, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 19, 1978, Ser. No. 952,705
Int. Cl.³ H03K *3/26*; G08B *13/26*
U.S. Cl. 328—5 **20 Claims**



1. A sensor for indicating the presence or absence of direct contact by a human member, comprising:

a sensor common bus;

first means for receiving a driving signal of at least one sequential pulse of a substantially predetermined peak amplitude with respect to said common bus;

a touchpad electrode formed of a conductive or semiconductive material and adapted to be directly contacted by said member;

a linear first impedance element connected between said first means and said touchpad electrode;

a second impedance element connected between said common bus and the junction between said first impedance element and said touchpad electrode;

a sense amplifier having an output and first and second inputs, said first input connected to the common junction of said first and second impedance elements and said touchpad electrode; and

second means coupled to said sense amplifier second input for providing a reference potential independent of said driving signal and of an essentially constant and predetermined non-zero value less than the peak amplitude of the driving signal;

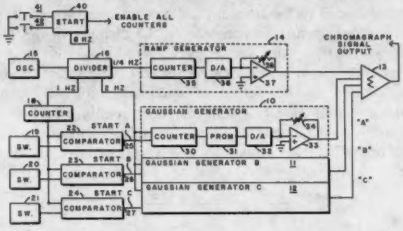
the output of said sense amplifier being in one of first and second conditions responsive respectively to the first input receiving portions of the driving signal respectively having greater than and less than the value provided by said second means in the respective presence and absence of contact of said touchpad electrode by said member.

4,237,422

CHROMATOGRAPH SIGNAL GENERATOR

Wilfried K. Lenhardt, Richardson, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 31, 1978, Ser. No. 938,275
Int. Cl.³ H03K *3/01, 3/04*
U.S. Cl. 328—61 **9 Claims**



1. A chromatograph signal generator comprising:

(a) a plurality of Gaussian-waveform generators,

(b) a ramp generator, and

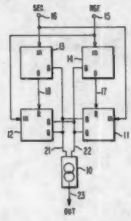
(c) means for summing the outputs of said plurality of Gaussian-waveform generators and said ramp generator to produce a chromatograph signal output.

4,237,423

DIGITAL PHASE DETECTOR

Randy D. Rhodes, Frenchtown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 8, 1978, Ser. No. 967,792
Int. Cl.³ H03K *5/26*
U.S. Cl. 328—133 **4 Claims**



1. A digital phase detector comprising:

means for applying first and second input signals the phase of which is to be compared;

a current source having first and second control terminals, for providing current of a first polarity in response to a first control signal being present at said first control terminal and to a second control signal being absent at said second control terminal, for providing current of a second polarity in response to said second control signal being present said second control terminal and to said first control signal being absent at said first control terminal, and providing substantially zero current in response to said first and second control signals being simultaneously present at said first and said second control terminals, respectively;

first and second bistable circuits for providing control signals to said first and second control terminals respectively, and for providing blocking signals; each bistable circuit susceptible of SET and RESET states with the potential

corresponding to one of these states supplying said control signals, and the blocking signal being provided in the RESET state; said first and second bistable circuits being induced to the SET state in response to determinable transitions of said first and second input signals respectively conditioned on both bistable circuits being in the reset state, and each bistable circuit being unconditionally RESET upon application of a reset pulse to RESET terminal thereof;

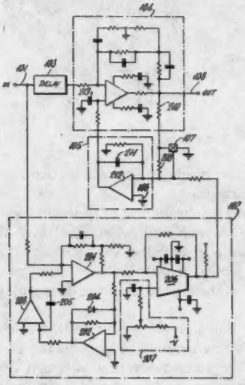
a first pulse forming circuit for providing reset pulses to the first bistable circuit in response to determinable transitions of the second input signal in the absence of the blocking signal from the first bistable circuit;

a second pulse forming circuit for providing reset pulses to the second bistable circuit in response to determinable transitions of the first input signal in the absence of the blocking signal from the second bistable circuit.

4,237,424
GATED BASELINE CORRECTOR

Irving L. Weiner, Sharon, Mass., assignor to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Aug. 18, 1978, Ser. No. 934,939
Int. Cl.³ H03L 5/00
U.S. Cl. 328—175 **2 Claims**



1. In a system for processing signals with respect to a predetermined baseline level, automatic baseline correcting means comprising:

(a) an amplifier having an output and at least one input, signals to be processed being coupled to said input;

(b) first feedback means, connected between the output and input of said amplifier for correcting the output level of said amplifier to said baseline level;

(c) means for detecting the presence of signals to be processed;

(d) means, responsive to the presence of signals at the input of said amplifier, for forcing said feedback means to supply an unchanging correction function to said amplifier for the duration of presence of said signals;

(e) wherein said means for detecting includes

(i) first amplifier means receiving said signals to be processed,

(ii) second feedback means between the output and input of said first amplifier means, for correcting the output level of said first amplifier means to a predetermined baseline level,

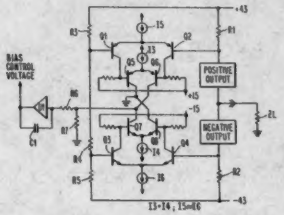
(iii) a reference voltage source, and

(iv) comparator means, for comparing corrected signal form said first amplifier means with said reference level, and responsively thereto, for conditioning said means for forcing.

4,237,425
AUTOMATIC BIAS ADJUSTING CIRCUIT

David A. Spiegel, 3625 W. Moreland Rd., Apt. C-23, Willow Grove, Pa. 19090

Filed May 3, 1979, Ser. No. 35,489
Int. Cl.³ H03F 3/18
U.S. Cl. 330—263 **23 Claims**



1. A circuit for automatic bias adjustment of a push-pull amplifier comprising:

a. current measuring means for comparing the current consumed by each half of said push-pull amplifier with a predetermined current level;

b. logic means for generating a control signal depending upon the input to said current measuring means;

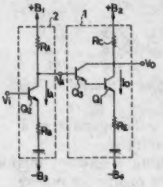
c. means for integrating the control signals of said logic means, and

d. bias control means connected to the output of said integrating means.

4,237,426
TRANSISTOR AMPLIFIER

Susumu Sueyoshi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,717
Claims priority, application Japan, Jan. 27, 1978, 53-8146
Int. Cl.³ H03F 3/04, 1/32
U.S. Cl. 330—296 **4 Claims**



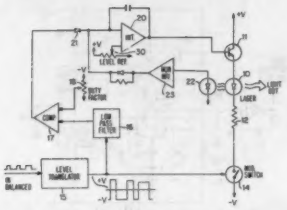
1. A transistor amplifier comprising; a first amplifier circuit having a first transistor, said first transistor having a base supplied with an input voltage, said first transistor having an output voltage wherein the ratio of an output voltage provided at the collector of said first transistor to said input voltage being n, where n is an integer of at least two; and a second amplifier circuit having a second transistor, said second transistor having a base to which said output voltage provided at the collector of said first transistor is applied through (n−1) PN junctions which are connected in series between said collector of said first transistor and said base of said second transistor.

4,237,427

APPARATUS FOR STABILIZING A LASER

John M. Holland, Shawsville, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 16, 1978, Ser. No. 916,399
Int. Cl.³ H01S *3/13*
U.S. Cl. 331—94.5 S **10 Claims**



1. Stabilizing apparatus for controlling the output radiation from a laser modulated according to an input signal optimumly possessing a balanced duty factor, in combination therewith of apparatus for deenergizing said laser when said input signal deviates from said balanced duty factor, comprising:

means responsive to said input signal to develop an output control signal indicative of the duty factor of said input signal, and

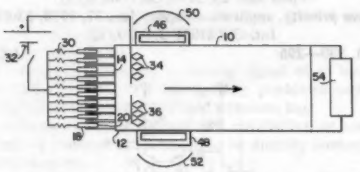
means coupled to said laser and responsive to said control signal for substantially reducing current conduction of said laser when said control signal is of a predetermined value indicative of said duty factor falling below an acceptable margin.

4,237,428

15.9 MICRON ACETYLENE LASER

Bernard L. Wexler, Arlington, Va.; Joseph A. Stregack, Silver Spring, and Thomas J. Manuccia, Jr., Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 1, 1978, Ser. No. 939,040
Int. Cl.³ H01S *3/00, 3/09*
U.S. Cl. 331—94.5 G **11 Claims**



1. An acetylene laser operable at a wavelength near 15.9 microns which comprises:

means for admitting a gaseous mixture including carbon monoxide into a plenum chamber;

means for vibrationally exciting the carbon monoxide in said plenum chamber;

means for pumping said vibrationally excited carbon monoxide gas mixture through a supersonic gas expansion section;

means for adding acetylene gas to said vibrationally excited carbon monoxide gas mixture in said supersonic gas expansion section;

oppositely disposed windows in said housing situtated downstream from said supersonic gas expansion section and positioned at Brewster's angle along said supersonic gas flow-laser cavity section;

a fully reflective spherical mirror opposite one window and a partially reflective mirror opposite the other window both mirrors being transparent at 8 microns and highly reflective at 16 microns thereby forming an optical cavity axis transverse to the gas flow;

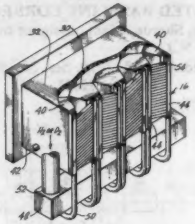
said laser operating such that said vibrationally excited carbon monoxide will transfer its energy to said acetylene gas thereby operating on the (01000) Σ_g^+ to (0001^{1}1^1) Σ_u^+ transition of the acetylene molecule with an output near 15.9 microns.

4,237,429

TRANSVERSE MIXING HYPERSONIC WEDGE NOZZLE CHEMICAL LASER

Dale L. Hook, and John Waypa, Jr., both of Rancho Palos Verdes, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 8, 1978, Ser. No. 958,919
Int. Cl.³ H01S *3/00*
U.S. Cl. 331—94.5 G **23 Claims**



1. Apparatus for mixing first and second reactants in a chemical laser, comprising:

primary nozzle means for expanding said first reactant to produce an expanding reactant flow field whose free expansion is essentially two dimensional in character and occurs predominantly in directions parallel to a given expansion plane parallel to the flow path of the flow field; and

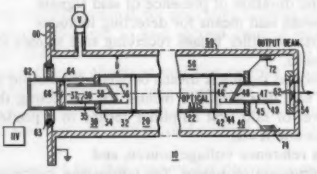
secondary injection means for mixing said second reactant with said first reactant predominantly by molecular diffusion of the second reactant into said first reactant flow field in transverse directions of said flow field expansion plane.

4,237,430

COAXIAL DISCHARGE SEALED-OFF QUARTZ LASER TUBE

Chi-Sheng Liu, Monroeville; Roy K. Williams, Murrysville, and Lelland A. Weaver, Wilkins Township, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1979, Ser. No. 15,844
Int. Cl.³ H01S *3/02*
U.S. Cl. 331—94.5 D **6 Claims**



1. A laser assembly comprising:

a tubular metal housing;

an open-ended tubular quartz laser discharge tube including a laser medium contained therein positioned within said tubular metal housing;

a first and second tubular molybdenum electrode means sealed to either end of said tubular quartz laser discharge tube, the longitudinal axis of said tubular molybdenum electrode means coinciding with the longitudinal axis of said tubular quartz laser discharge tube, said axis being the optical axis of said laser assembly;

laser windows sealed within said first and second tubular molybdenum electrode means to totally enclose the internal volume of said tubular quartz laser discharge tube;

electrical contact means extending between said first molybdenum electrode means and said tubular metal housing to provide electrical continuity therebetween;

mounting means connected to said second molybdenum electrode means for securing the combination of said quartz laser discharge tube and said first and second molybdenum electrode means within said tubular metal housing while electrically isolating said second molybdenum electrode means from said tubular metal housing;

electrical excitation means operatively connected to said second molybdenum electrode means to initiate laser discharge excitation within said tubular quartz laser discharge tube, said tubular metal housing being connected to an electrical ground with the longitudinal electrical discharge produced in said laser medium in response to said electrical excitation means extending between said first and second molybdenum electrode means, said longitudinal discharge serving as a central electrical conductor for said laser assembly and said tubular metal housing functioning as a ground return path which surrounds the laser discharge thereby minimizing the circuit inductance associated with the longitudinal discharge, said tubular metal housing functioning both as a heat shield and a ground shield for reducing electrical noise radiation.

4,237,431

FIVE PORT WAVEGUIDE SWITCH

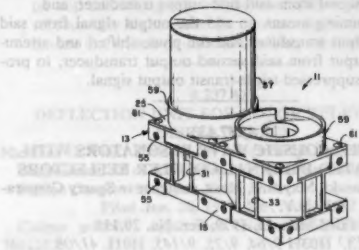
Isuneo Shishido, Rancho Palos Verdes; Herman W. Cramm, Rolling Hills Estates, and William L. Vick, Yorba Linda, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

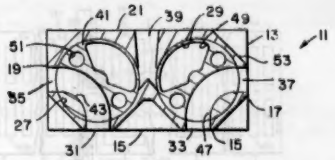
Filed Jul. 10, 1978, Ser. No. 922,896
Int. Cl.[2] H01P 1/10
U.S. Cl. 333—106 **5 Claims**

1. A five port waveguide switch comprising:

a housing having first and second rotor accepting cylindrical cavities and first and second ports, said housing having also include a third port associated with said first port, a fourth port associated with said second port, and a fifth port selectably associated with either said first port or said second port;

first and second rotors respectively disposed in said first and second cavities, said first rotor having a curved waveguide channel disposed therein providing a radiofrequency propagation path between said first and third ports when said first rotor is in a first position and providing said path between said first and fifth ports when said first rotor is in a second position, said second rotor having a curved waveguide channel disposed therein providing a radio frequency propagation path between said second and fourth ports when said second rotor is in its first position and providing said path between said second and fifth ports when said path between said second and fifth ports when said second rotor is in its second position; and





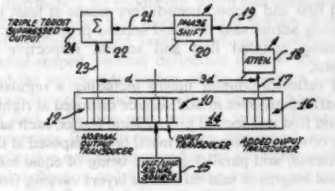
rotating means operatively coupled to said first and second rotors for selectably moving said rotors between their respective two positions.

4,237,432

SURFACE ACOUSTIC WAVE FILTER WITH FEEDFORWARD TO REDUCE TRIPLE TRANSIT EFFECTS

Marshall Y. Huang, Rancho Palos Verdes; Albert J. Grote, Venice, and Kuo-Hsiung Yen, Manhattan Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Mar. 5, 1979, Ser. No. 17,215
Int. Cl.[3] H03H 9/64, 9/25
U.S. Cl. 333—194 **4 Claims**



1. An acoustic wave filter device in which the effects of triple transit echo are substantially reduced, said device comprising:

a piezoelectric substrate;

an input transducer disposed on said substrate, to which an alternating electric signal is applied;

a first output transducer disposed on said substrate at a distance d from said input transducer, to receive acoustic waves propagated from said input transducer and to convert them to a corresponding electrical output signal;

a second output transducer disposed on said substrate at a distance of approximately 3d from said input transducer, in a direction opposite to the direction of the first output transducer;

electrical attenuation means coupled to said second output transducer, to adjust the amplitude of the signal generated at said second output transducer;

electrical phase-shifting means coupled to said second out-

put transducer, to adjust the phase of the signal generated at said second output transducer to be opposite to the phase of a triple transit signal component contained in the output signal from said first output transducer; and

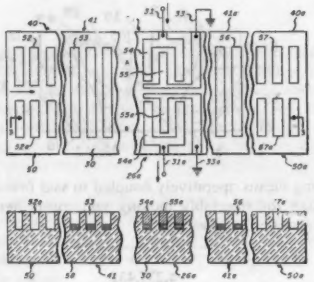
signal summing means, to add the output signal from said first output transducer and the phase-shifted and attenuated output from said second output transducer, to produce a suppressed-triple-transit output signal.

4,237,433

SURFACE ACOUSTIC WAVE RESONATORS WITH INTEGRATED INTERNAL COUPLER REFLECTORS

William J. Tanski, Maynard, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 13, 1979, Ser. No. 20,115
Int. Cl.³ H03H *9/64, 9/25, 9/145;* H01L *41/08*
U.S. Cl. 333—195 **7 Claims**



1. Signal processing apparatus comprising:

substrate means for propagating acoustic waves at a surface thereof,

first transducer means for launching an acoustic wave along a first propagation track at said surface,

second transducer means for receiving an acoustic wave propagating along a second propagating track at said surface and spaced from said first propagation track, and

first and second reflector-coupler means on opposite sides of said first and second transducers means at least in part extending across said first and second propagation tracks for forming coupled first and second respective resonator means,

said reflector-coupler means including a regular array of parallel grooves in said surface disposed at right angles to said first and second propagation tracks, each said parallel groove including a thin metal layer disposed at the bottom thereof, said parallel grooves being of equal length,

said lengths of said thin metal layers varying from a maximum adjacent said first and second transducer means to a minimum at the opposed end of said reflector-coupler means.

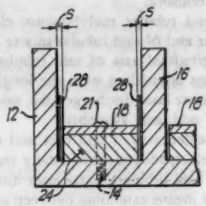
4,237,434

RIDGE WAVEGUIDE MODE SUPPRESSOR

Joseph D. Cappucci, Wayne, N.J., assignor to Merrimac Industries Incorporated, West Caldwell, N.J.

Filed Apr. 2, 1979, Ser. No. 26,083
Int. Cl.³ H01P *1/162, 1/203, 3/123*
U.S. Cl. 333—202 **7 Claims**

1. A transmission device comprising a conducting channel member having a cavity of a selected width, a conducting ground plane element disposed in said cavity and having a width less than said selected width, whereby a space is formed between said channel member and said ground plane element, whereby said space allows ridge waveguide modes to propagate a printed circuit board disposed on top of said ground plane element and having a width slightly less than said selected width said circuit board comprising a low pass filter having a selected cut off frequency and means disposed in said



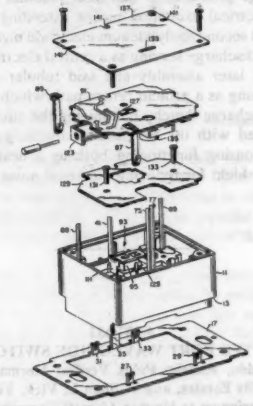
space for suppressing said ridge waveguide modes thereby preventing bypassing of said filter.

4,237,435

GROUND FAULT RECEPTACLE RE-SET GUIDE ASSEMBLY

David A. Cooper, Loganton; William T. Monoski, and Edward J. Vibert, both of Muncy, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 27, 1979, Ser. No. 33,919
Int. Cl.³ H01H *83/02*
U.S. Cl. 335—18 **15 Claims**



1. In a duplex electrical receptacle for mounting in a wall outlet box and connecting an electrical load to the conductors of a power source wherein a container of electrical insulating material is formed to include a recessed centrally apertured re-set button receiving portion, a pair of bus-bar conductors each having an affixed electrical contact with the bus-bar conductors formed to receive the prongs of a male plug, a ground fault circuit interrupting apparatus with a pair of flexible connectors each having an electrical contact aligned with an electrical contact of the bus-bar conductors and connected to the conductors of the power source, and an electrical circuit responsive to a ground fault condition for activating the ground fault circuit interrupting apparatus, the improvement comprising a re-set guide assembly including:

a re-set button formed for ingress and egress of said recessed button-receiving portion of said container;

a guide pin affixed to said re-set button and extending through said central aperture of said re-set button receiving portion of said container, said guide pin having retaining ring and indented latching grooves;

a retaining ring disposed within said retaining ring groove of said guide pin within said container;

a spring member telescoped over said guide pin and posi-

tioned intermediate said re-set button and said recessed button-receiving portion of said container;

a substantially oblong-shaped re-set guide member having a central aperture extending along a longitudinal axis and telescoped over said guide pin, said re-set guide member having a slotted end normal to said longitudinal axis, a spring-receiving hole spaced from said slotted end and normal to said longitudinal axis, and a pair of outstanding ear members oppositely disposed on said re-set guide member, and spaced from said spring-receiving hole and normal to said longitudinal axis;

a latch member having a pre-formed locking tab, a central aperture, and an "L"-shaped end portion with said locking tab capturing said latch member in slidable engagement within said slotted end of said re-set guide member, said latch member having a central aperture and formed for engagement with and disengagement from said indented latching groove of said guide pin, and said "L"-shaped end portion covering said spring-receiving hole of said re-set guide member; and

a biasing spring disposed within and extending outwardly from said spring-receiving hole of said re-set guide member and contacting said "L"-shaped portion of said latch member.

4,237,436

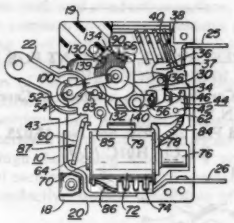
CIRCUIT BREAKER HAVING A MODIFIED ARMATURE FOR TIME DELAYS AT HIGH TRANSIENT CURRENTS

Edward J. Setescak, West Windsor, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Jan. 15, 1979, Ser. No. 3,522

Int. Cl.³ H01H 7/08

U.S. Cl. 335—63 **7 Claims**



1. A circuit breaker comprising

a solenoid coil,

a pivotal armature actuatable by said coil,

a frame about said coil,

a tube surrounded by said coil,

a movable and magnetizable core within said tube,

means for retarding movement of said core and biasing said core toward one end of said tube,

said armature having an attractable leg, an unlatching leg, and a balancing leg,

a magnetizable pole piece secured to the end of said tube opposite to the end toward which said core is biased and toward which said attractable leg is movable,

a toggle linkage and latch mechanism,

said pole piece defining with said core a magnetic gap,

said pole piece defining with said attractable leg another magnetic gap,

said core being movable toward said pole piece,

further means biasing said attractable leg away from said pole piece and biasing said unlatching leg away from said latch mechanism,

an auxiliary inertial mass pivotally carried by said balancing leg, and

a link pivotally connected to said auxiliary inertial mass and also pivotally connected to a fixed support within said circuit breaker and proportioned and located so that a certain angular movement of said balancing leg results in a greater angular movement of said auxiliary inertial mass, so that the current in the coil required to overcome the bias on said unlatching leg with substantially no time delay is substantially higher than the current required for a similar device but which omits said auxiliary inertial mass.

4,237,437

DEFLECTION UNIT FOR COLOR TELEVISION DISPLAY TUBES

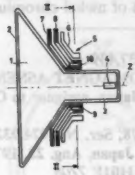
Nicolaas G. Vink; Joris A. M. Nieuwendijk, and Werner A. L. Heijnemans, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1979, Ser. No. 6,614

Claims priority, application Netherlands, Feb. 6, 1978, 7801317

Int. Cl.³ H01F 3/12

U.S. Cl. 335—211 **5 Claims**



1. A deflection unit for a color television display tube, said deflection unit comprising a core, a vertical deflection coil and a horizontal deflection coil, said vertical deflection coil having a winding distribution for producing, when said deflection unit is mounted on a display tube having a neck portion, a display screen and a funnel-shaped central portion therebetween, a weakly barrel-shaped vertical deflection field at the central portion and the screen-side portion of the deflection unit, and a pin cushion-shaped vertical deflection field at the neck-side portion of said deflection unit, wherein said deflection unit further comprises flux altering means associated with said vertical deflection coil and disposed at the neck-side portion of the vertical deflection coil for achieving a sharp pin cushion-shaped vertical deflection field at the neck-side portion of the deflection unit for correcting coma distortion.

4,237,438

HIGH RESISTANCE CONTINUOUS SHIELD FOR REDUCED CAPACITIVE COUPLING IN A DEFLECTION YOKE

John F. McCoy, Haddonfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 19, 1978, Ser. No. 971,035

Int. Cl.³ H01F 3/00

U.S. Cl. 335—214 **4 Claims**

1. A deflection yoke adapted for deflection of an electron beam produced by electron gun apparatus disposed within the interior of a vacuum tube, comprising first and second deflection windings, said first winding disposed between said second winding and said vacuum tube, said yoke including first and second electrostatic shields, said first electrostatic shield disposed between said first deflection winding and said vacuum

tube for reducing capacitive coupling between said first deflection winding and said electron gun apparatus, said second electrostatic shield disposed between said first and second

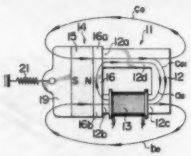
deflection windings for reducing capacitive coupling therebetween, wherein the improvement resides in that each of said shields is continuous and exhibits high resistivity and low permeability and is composed of nickel chromium alloy.

4,237,439

RELEASE ELECTROMAGNET ASSEMBLY

Kazuyuki Nemoto, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1978, Ser. No. 924,932
Claims priority, application Japan, Aug. 23, 1977, 52/101375
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—230 **10 Claims**



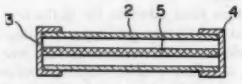
1. A release electromagnet assembly comprising an electromagnet including a U-shaped yoke having ends which are subject to a magnetic attraction by a permanent magnet and also including a release coil disposed on one limb of the yoke for producing a flux which passes through a magnetic path formed integrally of the yoke and which produces a magnetic pole at one of the ends which opposes the magnetic attraction, and a permanent magnetic body including said permanent magnet, the magnet having a magnetic pole of single polarity which is located adjacent to both ends of the yoke so that the magnetic flux from the magnet partly passes through a magnetic path located externally of the yoke when the ends of the yoke are held attracted to the permanent magnet.

4,237,440

GLASS-TUBE FUSE

Susumu Miyasaka, and Isamu Miyasaka, both of Yokosuka, Japan, assignors to Kowa Denki Kogyo Kabushiki Kaisha, Lamagawa, Japan

Filed Aug. 8, 1978, Ser. No. 931,917
Claims priority, application Japan, Aug. 9, 1977, 52-95315
Int. Cl.³ H01H *85/14*
U.S. Cl. 337—227 **7 Claims**



1. A glass-tube fuse comprising a glass tube, electrically conductive caps on both ends of the glass tube and a fuse element which is enclosed in said glass tube and connected between said caps, said fuse element being braided wire comprising a plurality of cores extending between said caps and at least one braiding strand of metallic material coiled alternately around said cores and connected at its ends to said caps.

4,237,441

LOW RESISTIVITY PTC COMPOSITIONS

Peter V. van Konynenburg, Palo Alto; Andrew Au, Fremont; Chris Rauwendaal, Menlo Park, and Alan J. Gotcher, Saratoga, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 1, 1978, Ser. No. 965,343
Int. Cl.³ H01C *7/02*
U.S. Cl. 338—22 R **43 Claims**

1. A conductive polymer composition which exhibits PTC behavior with a switching temperature T_s above 0° C., which has a resistivity of less than 7 ohm. cm at at least one temperature between T_s and −40° C.; and which comprises

(1) a polymer component having at least 10% crystallinity and

(2) a particulate filler component which has been dispersed in said polymer component and which comprises carbon black having a particle size, D, which is from 20 to 150 millimicrons and a surface area, S, in m^2/gram such that S/D is not more than 10; the amount of said filler component being such that the quantity

$$\frac{S}{D} \times \frac{\text{volume of filler component}}{\text{volume of polymer component}}$$

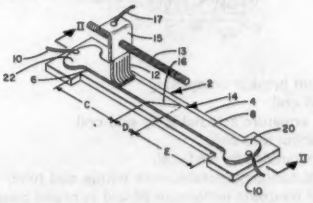
is less than 1.

4,237,442

ELECTRICAL RESISTANCE ELEMENT FOR VARIABLE RESISTANCE DEVICES

Jerry L. Carter, Cerritos, Calif., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,025
Int. Cl.³ H01C *10/40*
U.S. Cl. 338—180 **8 Claims**



1. An electrical resistance element of the type used in variable resistance devices wherein the resistance element forms a track for a multi-fingered electrical contact which is movable along the track to change the electrical resistance of the device comprising,

an electrically non-conductive substrate,

a track on the surface of the substrate for movement of a multi-fingered electrical contact,

said track comprising a series of materials of different electrical resistances deposited on the substrate in sequential, abutting relationship, forming an interface between each adjacent material,

the interface between the materials being shaped to form a transition section of the track wherein the multi-fingered contact moving along the track contacts both adjacent materials simultaneously with the ratio of each material being contacted changing as the multi-finger contact

moves through the transition section whereby the electrical resistance of the device is changed according to the shape of the interface.

4,237,443

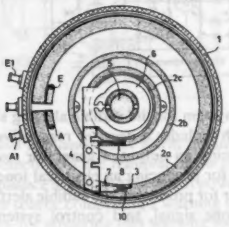
MOVABLE WIPER FOR POTENTIOMETERS

Ernst Gass, Stuttgart, Fed. Rep. of Germany, assignor to Novotechnik KG Offterdinger & Co., Ostfildern, Fed. Rep. of Germany

Continuation of Ser. No. 873,702, Jan. 30, 1978, abandoned. This application Jun. 20, 1979, Ser. No. 50,190

Int. Cl.³ H01C *1/12*

U.S. Cl. 338—202 **10 Claims**



1. In a wiper for high speed adjustable resistance, potentiometers and the like having a plurality of electrically conductive and flexible fingers which slidably engage a conductive surface along a given path and in which the fingers are arranged in parallel to each other with lateral separations therebetween and are carried by a relatively rigid support and having each a flexible length which extends outwardly from said support and in engagement with said conductive surface, the improvement comprising a common covering of yieldable elastomeric material extending over portions of said flexible lengths of said parallel fingers extending outwardly from said support and over portions of said lateral separations between said length portions to form a continuous covering over said length and separation portions, said elastomeric material having a high degree of internal friction and practically no elasticity thereby exerting a high dampening force on a possible oscillating movement of each of said fingers, the contact area of the wiper with said conductive surface being free of said elastomeric material.

4,237,444

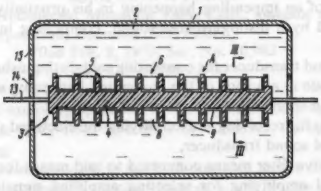
HEAVY-DUTY PRECISION WIRE-WOUND ALTERNATING-CURRENT RESISTOR AND METHOD OF MAKING

Endel T. Lippmaa, ulitsa Sybra, 14, kv. 2, and Vambola I. Roose, ulitsa Ryannaku, 3, kv. 4, both of Tallin, U.S.S.R.

Filed Mar. 13, 1979, Ser. No. 20,083

Int. Cl.³ H01C *1/02, 3/14*

U.S. Cl. 338—270 **15 Claims**



1. A heavy-duty precision wire-wound alternating-current resistor comprising:

a capsule;

a liquid dielectric formed of a low-viscosity liquid perfluorinated organic compound and provided for filling said capsule;

a sectionalized bobbin arranged within said capsule and made from an insulating material being chemically resistant to said liquid perfluorinated organic compound; and

a resistance element arranged on said sectionalized bobbin with a clearance therebetween, said clearance being dimensioned so as to exceed by at least an order of magnitude the change in the bobbin diameter due to the thermal expansion of the material of said sectionalized bobbin,

said resistance element being made in the form of a high-resistance insulated wire winding.

4,237,445

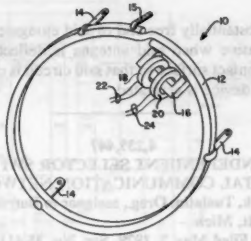
TIRE PRESSURE COMMUNICATION DEVICES

Richard L. Crossman, Tallmadge, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jul. 30, 1979, Ser. No. 61,580

Int. Cl.³ B60C *23/02*

U.S. Cl. 340—58 **9 Claims**



1. Apparatus for sensing the pressure of an aircraft tire and for communicating such pressure sensing from a rotating tire to a stationary portion of the aircraft, comprising:

tire pressure sensing means connected to and rotatable with the tire;

signal receiving means comprising a coil fixedly secured to a stationary portion of the aircraft; and

communication means comprising a core positioned and movable within said coil and operatively connected to said sensing means for communicating a signal indicative of tire pressure from said sensing means to said coil.

4,237,446

VEHICLE CLEARANCE DETECTOR

William L. Roberts, 2319 E. McArthur, Tempe, Ariz. 85281

Filed Jul. 27, 1979, Ser. No. 61,529

Int. Cl.³ G08B *21/00*; H01H *3/16*

U.S. Cl. 340—61 **1 Claim**

1. In a clearance detecting device for warning the driver of a vehicle of an impending obstruction, including

(a) a base adapted for attachment to an existing structure;

(b) an antenna for contacting said obstruction;

(c) primary spring means, laterally deflectable from a normally generally linear position, for attaching said antenna to said base, and

(d) an electrical circuit having an alarm device and normally open switch means, said switch means responsive to close and activate said circuit when said antenna is contacted and deflected by said obstruction,

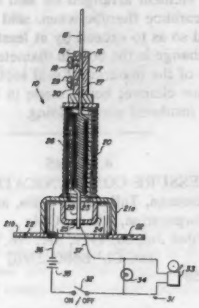
the improvements in said clearance detecting device which permit deflection of said antenna in any direction through an arc of at least 90° and in which said switch means comprises,

(a) a contact surface mounted in said base and included in said circuit, and

(b) elongate spring means normally generally parallel along the length thereof to said primary spring means and having a pair of ends,

(i) a first end attached to said clearance detector device, and

(ii) means mounting said first end to said primary spring means, and



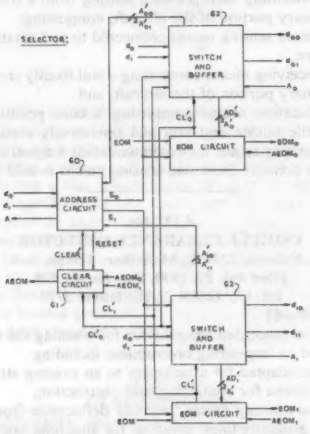
(iii) a substantially free end of said elongate spring means responsive when said antenna is deflected to engage said contact surface so that said circuit is closed and said alarm device is activated.

4,237,447

SPEED INDEPENDENT SELECTOR SWITCH FOR DIGITAL COMMUNICATION NETWORKS

Becky J. Clark, Tualatin, Oreg., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 2, 1979, Ser. No. 35,411
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—147 T **4 Claims**



1. A selection switch for receiving signals from a node of a digital communication network and transmitting those signals to one of two other nodes, said switch comprising:

a pair of switch circuits, each adapted to receive a set of said data signals;

an address circuit to receive said data signals preceded by an address signal specifying which of two nodes is to be selected for subsequent transmission and to signal the corresponding one of said switch circuits; and

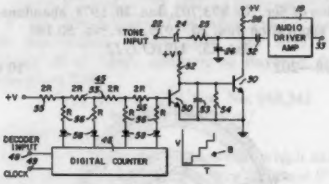
said address circuit includes means to remove the first address bit of the address upon selection of one of the pair of switch circuits.

4,237,448

PAGER WITH ESCALATING AUDIO ALERT SIGNAL LEVEL

Morton Weinberg, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1979, Ser. No. 34,302
Int. Cl.³ G08B *27/00*; H04M *11/02*; H04Q *9/08*
U.S. Cl. 340—311 **7 Claims**



1. A control system for the audible alerting signal of paging apparatus which includes a decoder responsive to a received code for producing an output, a generator responsive to the decoder output for producing an electrical tone signal, and an audio transducer for producing the audible alerting signal from the electrical tone signal, said control system including in combination:

signal translating means connecting the generator to the audio transducer for applying the electrical tone signal to the transducer; and

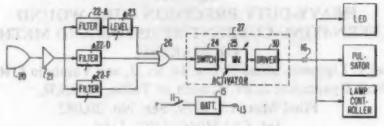
level control means connected to said signal translating means and coupled to the decoder, said level control means causing said signal translating means to apply the electrical signal to the audio transducer at an initial low level and being responsive to the decoder output to cause said translating means to apply the electrical signal to the audio transducer at a higher level as the signal continues.

4,237,449

SIGNALLING DEVICE FOR HARD OF HEARING PERSONS

J. Scott Zibell, 60 Brittany Ct., Charlotte, N.C. 28211

Filed Jun. 16, 1978, Ser. No. 916,420
Int. Cl.³ H04R *25/00*; H04Q *9/00*
U.S. Cl. 340—407 **10 Claims**



1. A signalling device for making a hard of hearing person aware of an impending happening in his proximity which is foretold by a distinguishable sound, comprising in combination:

a sound transducer for converting said distinguishable sound made in advance of the impending happening and associated therewith to an electrical signal,

means for receiving and amplifying the electrical signal from said sound transducer,

selective filter means connected to said means for receiving and amplifying for selecting amplified signals above a selected amplitude and within a selected frequency range, and

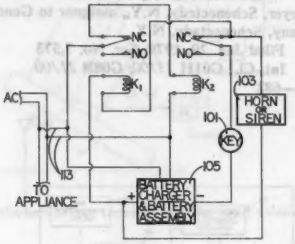
an indicator means connected to said selective filter means for providing a non-aural stimulus to said hard of hearing person.

4,237,450

APPLIANCE THEFT ALARM

Antonio R. Canez, 1210 W. Siglo Pl., Tucson, Ariz. 85705

Filed Nov. 13, 1978, Ser. No. 959,697
Int. Cl.[3] G08B *13/14*
U.S. Cl. 340—571 7 Claims



1. An electrical appliance theft alarm for installation on an appliance for detection of the removal of the electrical power through the appliance associated electrical power cord from an electrical power source comprising a warning sound device an electrical battery for powering said warning sound device, and a first relay and a latch-up relay, both said first relay and latch-up relay having an electromagnetic energizing coil and responding normally open and normally closed contacts, said first relay coil operably connected to said associated appliance power cord through said latch-up relay normally closed contact, and said first relay normally closed contact operably connected between said electrical battery and said warning sound device, said latch-up relay coil operably connected to said battery through said first relay normally closed contact whereby said first relay coil is continually energized by the outside electrical power source and the warning device inhibited, but when the outside electrical power source is removed from the appliance, said warning device is activated by said electrical battery through said first relay normally closed contacts and said latch-up relay coil is also energized and thereby removes said first relay coil from the outside power source in order that the re-application of power to the appliance's electrical power cord does not shut off the warning device.

4,237,451

METHOD AND MEANS FOR CONTINUOUSLY SAMPLING A FLUID

Keith E. Hollenbeck, Mountain View, Calif., assignor to Spectrex Corporation, Redwood City, Calif.

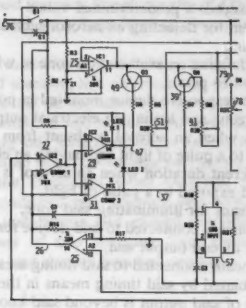
Filed Feb. 9, 1979, Ser. No. 10,903
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—606 7 Claims

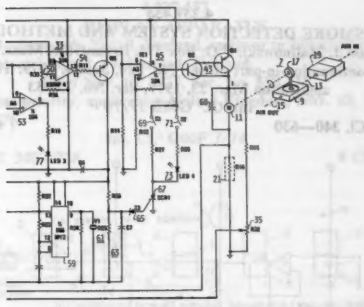
1. Fluid-sampling apparatus including fluid-pumping means arranged to pump fluid through a test chamber, the apparatus comprising:

motor means coupled to the fluid-pumping means for pumping fluid through the test chamber at a flow rate which is determined by the characteristics of applied motor current and fluid pressure differential across the test chamber;

monitoring means coupled to the motor means for producing a signal proportional to the motor current therethrough; and

circuit means responsive to the signal from said monitoring means for supplying current to said motor means through





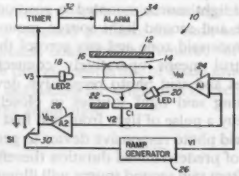
the monitoring means to maintain the flow rate of fluid through the test chamber substantially constant.

4,237,452

SMOKE DETECTION SYSTEM AND METHOD

William J. Malinowski, Johnson St., P.O. Box 274, Bryantville, Mass. 02327

Filed Jan. 4, 1979, Ser. No. 824
Int. Cl.[3] G08B *17/10*
U.S. Cl. 340—630 13 Claims



1. The method of detecting the presence of an aerosol within a volume, comprising the steps of

(a) first, illuminating a photo responsive device exposed to said volume to pre bias said device and generate an electrical output therefrom having a waveform of one configuration,

(b) secondly, periodically terminating the first step and illuminating said volume whereby any aerosol present in said volume will reflect light onto said device to change the waveform to a second configuration and to extend the duration of said electrical output,

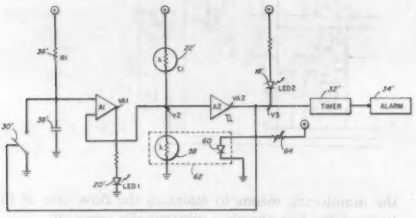
(c) thirdly, measuring the duration of said electrical output after termination of said first step, and,
(d) generating an alarm in the event that the duration of any output exceeds a predetermined value.

12. A system for detecting an aerosol such as smoke or the like, comprising
(a) means defining an examination zone in which an aerosol is adapted to pass,
(b) a photo responsive device mounted in position to monitor said zone and having an electrical output of a known duration when an aerosol is absent from said zone and exposed to a pulse of light and having an electrical output of a different duration when an aerosol is present in said zone and exposed to a pulse of light,
(c) light means for illuminating said zone,
(d) timing means connected to said device for measuring the duration of said output and,
(e) alarm means connected to said timing means and adapted to be actuated by said timing means in the event that the duration of said output is beyond said known duration.

4,237,453
SMOKE DETECTION SYSTEM AND METHOD

William J. Malinowski, P.O. Box 274, Bryantville, Mass. 02327

Continuation-in-part of Ser. No. 824, Jan. 4, 1979. This application Mar. 23, 1979, Ser. No. 23,033
Int. Cl.[3] G08B *17/10*
U.S. Cl. 340—630 7 Claims

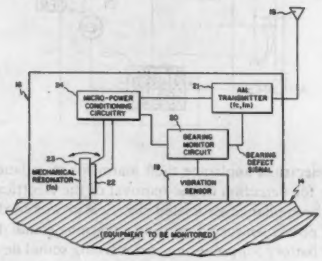


1. A system for detecting an aerosol such as smoke or the like, comprising
(a) means defining an examination zone in which an aerosol is adapted to pass,
(b) a photo responsive device mounted in position to monitor said zone and having an electrical output of a known duration when an aerosol is absent from said zone and having an electrical output of a different duration when an aerosol is present in said zone,
(c) a first light source mounted in position to illuminate said device and second light source mounted in position to illuminate said zone and any aerosol therein,
(d) control means operatively connected to said light sources and said photo responsive device for cyclically operating said light sources in closely timed sequence whereby a pulse of light from said first source will illuminate said photo responsive device to generate an electrical pulse of predetermined duration therefrom and a pulse of light from said second source will illuminate said zone and reflect against any aerosol present therein and onto said photo responsive device to extend the duration of said electrical pulse,
(e) timing means connected to said device for measuring the duration of said output,
(f) alarm means connected to said timing means and adapted to be actuated by said timing means in the event that the duration of said output is beyond said known duration,
(g) a second photo responsive device connected to said first device,
(h) second light means illuminating said second device, and,
(i) adjustment means connected to said second light means for adjusting the output thereof until the resistance of said second device corresponds to that of said first device when an aerosol is present.

4,237,454
SYSTEM FOR MONITORING BEARINGS AND OTHER ROTATING EQUIPMENT

Leslie D. Meyer, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,573
Int. Cl.[3] G01H *13/00*; G08B *21/00*
U.S. Cl. 340—682 5 Claims



1. A system for monitoring rotating machinery at many locations and communicating a fault condition to a central station, said machinery inherently having a fundamental unbalance component of machine vibration, comprising:
a self-powered monitor unit removably mounted on every piece of machinery on a stationary structure thereof at a position to sense structure-borne vibrations;
each monitor unit including a tuned mechanical resonator for generating electrical power which operates at the rotational frequency of the machinery and is driven by the fundamental unbalance component of machine vibration; a power conditioner for converting the generated electrical power; a vibration sensor for sensing said structure-borne vibrations and continuously producing an electrical vibration signal; signal processing circuitry for continuously processing said vibration signal and producing a defect signal upon the occurrence of a fault condition; and radio transmitter circuitry triggered by said defect signal for transmitting to the central station a radio signal that uniquely identifies the piece of machinery with a fault condition;
said tuned mechanical resonator comprising a cantilever beam and an attached piezoelectric element; said power conditioner being connected to said piezoelectric element and supplying electrical power to said signal processing circuitry continuously so long as said machinery is rotating and to said radio transmitter circuitry only upon triggering by said defect signal.

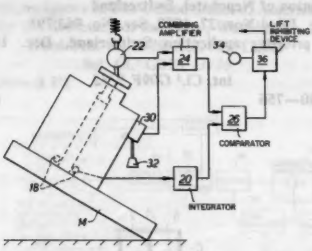
4,237,455
IMPROVEMENTS IN SAFETY DEVICE FOR LIFTING MAGNETS

Philip Beckley, Newport, and John Mildoon, Dudley, both of England, assignors to British Steel Corporation, London, England

Filed Jul. 10, 1978, Ser. No. 923,352
Int. Cl.[3] G08B *21/00*; B66C *15/00*
U.S. Cl. 340—685 24 Claims

1. A safety system for a magnetic lifting device comprising sensor means for producing a signal representative of flux produced by a device in the magnetic circuit including a body to be lifted, a transducer capable of producing a signal representative of the lifting tension applied to the device together with signal translation means arranged to receive signals de-

rived from the sensor means and from the transducer and effective to provide an output indicating existence of a safety



margin between lifting tension and the field available for lifting.

4,237,456

DRIVE SYSTEM FOR A THIN-FILM EL DISPLAY PANEL

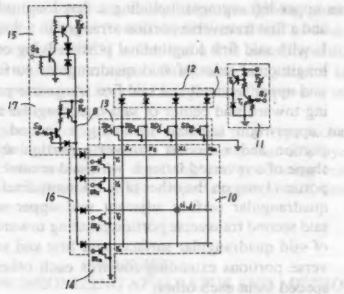
Yoshiharu Kanatani, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 26, 1977, Ser. No. 819,147

Claims priority, application Japan, Jul. 30, 1976, 51-92571; Feb. 10, 1977, 52-13630; Feb. 10, 1977, 52-13631; Feb. 10, 1977, 52-13632; Feb. 14, 1977, 52-15429

Int. Cl.[3] G06F 3/14

U.S. Cl. 340—719 12 Claims



1. A drive system for a thin-film EL matrix display panel, said panel including a thin-film EL element sandwiched between a pair of dielectric layers, scanning line electrodes formed on one of said dielectric layers and data line electrodes, transversely disposed of said scanning line electrodes, formed on the other of said dielectric layers, said scanning and data line electrodes defining individual picture points at respective crossings thereof to provide a matrix of picture points and said thin-film EL element having a predetermined threshold voltage level of electroluminescence, said drive system comprising:

first charging means for applying a first selection voltage to said data line electrodes of a magnitude less than said threshold voltage level of electroluminescence;

a plurality of data side switching means connected to each of said data line electrodes on one end and to a ground potential on the other end for switching to a first switched condition and to a second switched condition, said data side switching means selectively maintaining said first selection voltage on desired ones of said data line electrodes when switched to said first switched condition, said data side switching means selectively maintaining said ground potential on the remaining ones of said data line electrodes when switched to said second switched condition;

second charging means for applying a second selection voltage to said scanning line electrodes of a magnitude less than said threshold voltage level of electroluminescence; and

a plurality of scanning side switching means connected to each of said scanning line electrodes on one end and to a ground potential on the other end for switching to a first switched condition and to a second switched condition, said scanning side switching means selectively maintaining said second selection voltage on desired ones of said scanning line electrodes when switched to said first switched condition, said scanning side switching means selectively maintaining said ground potential on the remaining ones of said scanning lines electrodes when switched to said second switched condition.

4,237,457

DISPLAY APPARATUS

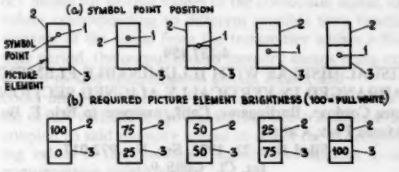
John Houldsworth, Yeovil, England, assignor to Elliott Brothers (London) Limited, Chelmsford, England

Filed Nov. 10, 1977, Ser. No. 850,231

Claims priority, application United Kingdom, Nov. 15, 1976, 47417/76

Int. Cl.[2] G06F 3/14

U.S. Cl. 340—728 8 Claims



1. A method of displaying a symbol on a display apparatus of the kind having a display area which is effectively a regular array of display elements on which a symbol is produced by brightening selected ones of the display elements, the method comprising: selecting the positions of a multiplicity of equally-spaced points on the display area required to define said symbol; for each said symbol point, determining the relative brightness contributions of a group of said display elements adjacent the position required for that symbol point so that said group of display elements create a subjective impression of that symbol point at its required position; for each said element, summing the brightness contributions required for each symbol point for which that element is one of a said group adjacent that symbol point; and setting the brightness of each element in accordance with the summation.

4,237,458

STROKE EXPANSION APPARATUS

Robert H. Lantz, Round Rock, and Alfred A. Schwartz, Leander, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1979, Ser. No. 52,054

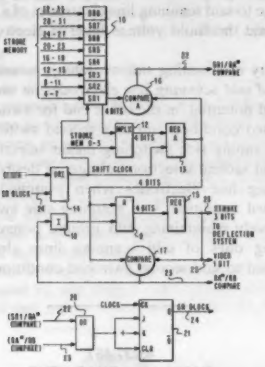
Int. Cl.[3] G06F 3/153

U.S. Cl. 340—739 10 Claims

1. In a display system in which a sequence of strokes define individual symbols, the improvement comprising:

detecting means for generating a first signal upon the detection of a first stroke immediately succeeded by a second

stroke of opposite direction to said first stroke and of the same video state as said first stroke; and



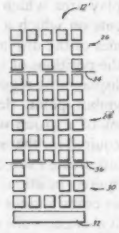
means responsive to said first signal for automatically initiating another display system operation.

4,237,459

VISUAL DISPLAY WITH ILLUMINABLE ELEMENTS ARRANGED IN VERTICALLY ALIGNED SECTIONS

James Cordova, Burlingame, Calif., assignor to Eric F. Burtis, Menlo Park, Calif.

Filed Dec. 21, 1978, Ser. No. 972,017
Int. Cl.[3] G09F 9/32
U.S. Cl. 340—756 12 Claims



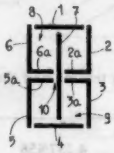
1. In a luminescent display in which individual illuminable elements are located in fixed positions in said display and are electrically connected and arranged in a multipurpose matrix and are coupled to respond directly and concurrently to binary electronic alphabet character codes and are actuable in selected combinations to produce an illuminated display of alphabet characters as specified by said binary electronic alphabet character codes, the improvement wherein said elements are positioned in upper, central and lower vertically aligned sections, each section including a plurality of said elements, and wherein a plurality of elements in each of said upper and lower sections are coupled together for tandem enablement, and said elements in said lower section are responsive only to character codes of alphabet characters having portions descending below a baseline.

4,237,460

ELECTRO-OPTIC DISPLAY DEVICE

Freddy Huguenin, Lausanne, Switzerland, assignor to Ebauches S.A., Canton of Neuchatel, Switzerland

Filed Nov. 27, 1978, Ser. No. 963,791
Claims priority, application Switzerland, Dec. 12, 1977, 15193/77
Int. Cl.[3] G09F 9/32
U.S. Cl. 340—756 6 Claims



1. A display device for displaying the ten digits, the device being substantially disposed on the sides of a quadrangular surface, the quadrangular surface having a center, a top side, a bottom side, and two longitudinal sides, the device comprising:

an upper segment lying on said top side of said quadrangular surface;

an upper-left segment including a first longitudinal portion and a first transverse portion arranged in a shape of a letter L with said first longitudinal portion lying on one of the longitudinal sides of said quadrangular surface adjacent said upper segment and said first transverse portion pointing toward said center of said quadrangular surface;

an upper-right segment including a second longitudinal portion and a second transverse portion arranged in a shape of a reversed letter L with said second longitudinal portion lying on the other of said longitudinal sides of said quadrangular surface adjacent said upper segment and said second transverse portion pointing toward said center of said quadrangular surface, said first and second transverse portions extending towards each other, but being spaced from each other;

a lower-right segment including a third longitudinal portion and a third transverse portion arranged in a shape of a number 7 with said third longitudinal portion lying on said other of said longitudinal sides of said quadrangular surface and said third transverse portion pointing toward said center of said quadrangular surface adjacent said second transverse portion;

a lower-left segment including a fourth longitudinal portion and a fourth transverse portion arranged in a shape of a reversed number 7 with said fourth longitudinal portion lying on said one longitudinal side of said quadrangular surface and said fourth transverse portion pointing toward said center of said quadrangular surface adjacent said first transverse portion, said third and fourth transverse portions extending toward each other, but being spaced from each other;

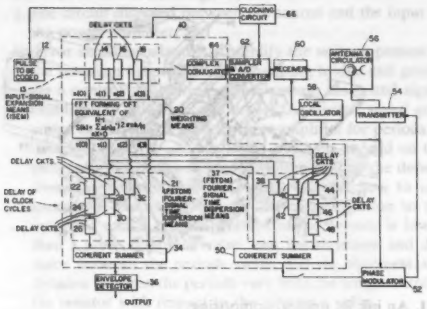
a lower segment lying on said bottom side of said quadrangular surface; and

a longitudinal substantially rectilinear segment, passing through said center of said quadrangular surface in the space between said first and second transverse portions and the space between said third and foruth transverse portions and dividing said quadrangular surface into a right portion and a left portion.

4,237,461
HIGH-SPEED DIGITAL PULSE COMPRESSOR

Ben H. Cantrell, Springfield, Va., and Bernard L. Lewis, Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 15, 1979, Ser. No. 12,409
Int. Cl.[3] G01S *13/28*
U.S. Cl. 343—5 FT 6 Claims



1. Signal-processing means comprising:

pulse coder means for providing a series of weighted pulses from a single input pulse, the time interval of the series being greater than that of said input pulse,

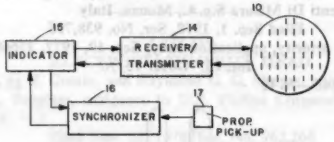
said coder means including input-signal expansion means (ISEM) into which the input signal is fed, said ISEM comprising at least one delay stage, weighting means comprising a discrete Fourier transform circuit to which the output of the ISEM is fed, and a first time-dispersion means to which the outputs of said weighting means are fed for spreading the series of weighted pulses over a still greater time interval; and

pulse-compression means, of the matched filter type including weighting means which is the same as that employed in said coder means, for receiving and processing echo signals corresponding to the output signals of said time-dispersion means.

4,237,462
RADAR SYNCHRONIZING APPARATUS AND METHOD

James U. Lemke, 1728 Ocean Front, Del Mar, Calif. 92014, and James A. Bixby, 5640 Sandburg Ave., San Diego, Calif. 92122

Filed Feb. 28, 1979, Ser. No. 16,103
Int. Cl.[3] G01S *7/28*
U.S. Cl. 343—5 R 12 Claims



7. Apparatus for synchronizing the firing of radar pulses from behind the propeller of an airplane, said apparatus being comprised of:

means for determining a dead zone comprising an angular increment of blade position within which if the radar is fired a blade of said propeller will intersect the path of said radar pulse or its return and outside of which no blade of propeller will intersect the path of said pulse or its return;

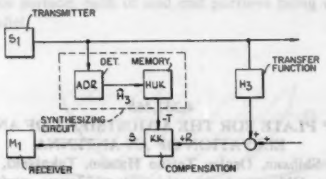
means for detecting when any blade of said propeller is within said dead zone; and

means for generating commands to fire said radar only when no blade of said propeller is within said dead zone.

4,237,463
DIRECTIONAL COUPLER

Hakon E. Bjor, Hvalstad, and Bjorn H. Raad, Oslo, both of Norway, assignors to A/S Elektrisk Bureau, Nesbru, Norway

Filed Oct. 20, 1978, Ser. No. 952,984
Claims priority, application Norway, Oct. 24, 1977, 773627
Int. Cl.[3] H04B *1/12*
U.S. Cl. 370—27 11 Claims



1. A directional coupler for duplex transmission systems including a transmitter and a receiver comprising compensation circuit means for connection to the receiver,

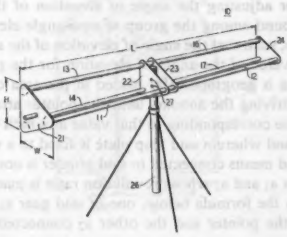
correction signal means coupled to said compensation circuit means for providing a correction signal thereto for suppressing part of the signal received by said receiver, which part is caused by the transmitted signal from said transmitter, said correction signal means including memory means for storing values of the correction signal, said values corresponding to different possible time function variants of the signal from the transmitter within a fixed time period, the output of said memory means being connected to said compensation circuit means, and

decoder means connected to the transmitter for detection of the actual variants of the signal from said transmitter, and coupled to said memory means to select the corresponding values of the correction signal to be applied to said compensation circuit means.

4,237,464
RADAR ANTENNA EMPLOYING PHASE SHIFTED COLLINEAR DIPOLES

Otto E. Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 26, 1978, Ser. No. 973,642
Int. Cl.[3] H01Q *3/26*
U.S. Cl. 343—814 4 Claims



1. An antenna array radiation pattern shifting system comprising first and second half-wave antennas colinearly disposed in a common plane;

a fixed phase shifting means connected to said first antenna;

a second variable phase shifting means connected to said second antenna;

the phase shift introduced by said variable phase shifting means being substantially double the phase shift introduced by said fixed phase shifting means; and

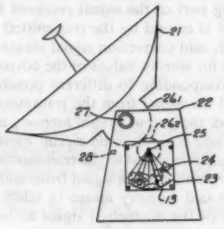
switching means for selectively bypassing the second phase shifting means for changing the direction of said antenna array radiation pattern.

4,237,465

MAP PLATE FOR THE ADJUSTMENT OF ANGLE ELEVATION OF AN ANTENNA

Yoshizo Shibano, Osaka; Tetsuo Hatano, Takatsuki, and Toshihiko Ohkura, Amagasaki, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 697,974, Jun. 21, 1976, abandoned.
This application Mar. 19, 1979, Ser. No. 21,763
Claims priority, application Japan, Jun. 26, 1975, 50-090335
Int. Cl.³ H01Q *3/00*
U.S. Cl. 343—894 **2 Claims**



1. An antenna and map plate combination for adjusting the angle of elevation of the antenna which comprises a contour map of polar coordinates of an area of signal receiving points; a group of equi-angle elevation lines on said map; a scale of the angle of elevation which covers the whole area of signal receiving points and which is given on a circumferential portion of said map; a pointer which is provided on the origin of the polar coordinates and rotates around said origin to indicate the values of said scale; means connected to said pointer for interconnecting the revolution of the pointer to the revolution of an antenna for adjusting the angle of elevation of the antenna, which is found among the group of equi-angle elevation lines on the map, such that the angle of elevation of the antenna will attain the value of the angle of elevation for the point where the antenna is geographically placed in the area of receiving points by driving the antenna until the pointer attains a value on said scale corresponding to that value at which the antenna is placed; and wherein said map plate is fixed to a stand of the antenna and means connected to said pointer is composed of a set of gears a_1 and a_2 whose revolution ratio is made A which is given by the formula below, one of said gear a_1 being connected to the pointer and the other a_2 connected to the antenna,

$$\theta - \theta o' = A\,(\theta u - \theta uo')$$

where

θ is an arbitrary angle,

θu is the angle of elevation of an antenna,

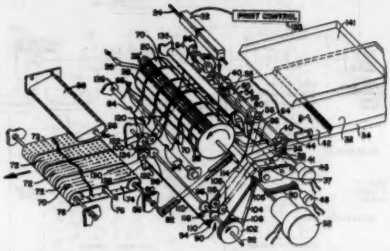
$\theta o'$ and $\theta uo'$ are arbitrary constants.

4,237,466

PAPER TRANSPORT SYSTEM FOR AN INK JET PRINTER

Robert J. Scranton, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed May 7, 1979, Ser. No. 36,886
Int. Cl.³ B65H *7/06;* H04N *1/22;* G01D *15/16*
U.S. Cl. 346—75 **14 Claims**



1. An ink jet printer, comprising:

rotatable support means for supporting a sheet of paper, said support means defining an interior vacuum chamber and a plurality of vacuum openings in the surface of said support means communicating with said chamber,

rotary drive means for rotating said support means,

vacuum source means for partially evacuating said interior vacuum chamber in said rotatable support means,

paper supply means, adjacent said rotatable support means, for loading a sheet of paper onto said rotatable support means,

an ink jet print head, mounted adjacent said rotatable support means, for printing on a sheet of paper supported on said rotatable support means,

sheet diverter means, positioned adjacent said rotatable support means beween said ink jet print head and said paper supply means, for stripping a sheet of paper from said rotatable support means if the sheet is not firmly supported thereon, and

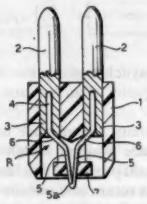
paper sensor means mounted adjacent said rotatable support means, intermediate said sheet diverter means and said ink jet print head, for inhibiting operation of said ink jet print head when a sheet of paper is diverted by said paper diverter means.

4,237,467

THERMAL WRITING DEVICE FOR RECORDING APPARATUS

Renzo Fedrigo, San Fruttuoso - Monza, Italy, assignor to C.G.S. Istrumenti Di Misura S.p.A., Monza, Italy

Filed Sep. 1, 1978, Ser. No. 938,795
Claims priority, application Italy, Sep. 19, 1977, 27668 A/77
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 R **15 Claims**



1. A thermal writing device for recording apparatus using heat-sensitive paper and comprising:

a nib including writing means in the form of a resistor having an electric resistance substantially dependent on temperature and shaped as a stylus, and

an electric supply control circuit which supplies the resistor directly and controls its temperature so as to heat the writing means, comprising

a measuring bridge, one arm of which supplies the resistor;

a power amplifier for supplying the measuring bridge;

a source of a.c. electric signals;

a gate circuit disposed between the source and the input of the power amplifier, and

an error amplifier adapted to amplify the voltage present at the sampling diagonal of the measuring bridge and generate a control signal for the gate circuit, the contrl signal enabling the gate circuit to supply the electric signal generated by the source of the power amplifier for periods of time, the duration and sequence of which depend on the amount of unbalance of the measuring bridge, the dependence being such that the length and nearness to one another of the supply periods vary in proportion to the extent to which the temperature of the resistor is lower than a given reference value, and the shortness and distance between the periods value, and the shortness and distance between the periods vary with the temperature of the resistor with respect to the reference value.

4,237,468

RECORDING MEMBER

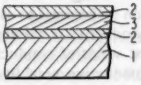
Akira Nahara; Minoru Wada; Yuzo Mizobuchi, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 21, 1977, Ser. No. 862,883

Claims priority, application Japan, Dec. 29, 1976, 51-158464

Int. Cl.³ G01D *15/34*

U.S. Cl. 346—135.1 **13 Claims**



1. A recording member comprising a support having a recording layer thereon wherein the recording layer contains (a) a metal selected from the group consisting of Sn, Bi and In and (b) a halide capable of being thermally or photo-chemically activated by high energy density light irradiation and which thereby promotes a thermally initiated phase or structure change of the metal (a), wherein said halide (b) is selected from the group consisting of ZnI_2, SbI_3, SbI_5, CdI_2, KI, AgI, ZrI, SnI_2, SnI_4, SrI_2, CsI, TiI, WI_2, TiI_4, CuI, ThI_4, PbI_2, BiI_3, $SbBr_3$, AgBr, $SnBr_2$, CsBr, TiBr, CuBr, NaBr, $PbBr_2$, NbBr, $BaBr_2$, $CdCl_2$, KCl, AgCl, $SnCl_2$, TlCl, $FeCl_3$, $TaCl_5$, CuCl, NaCl, $PbCl_2$, $NdCl_3$, $BaCl_2$, and a mixture thereof.

4,237,469

ELECTROSTATIC WRITE HEAD

Pol A. G. J. Gustin, and Raymond G. G. Shayes, both of Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,264

Claims priority, application Belgium, Dec. 6, 1977, 183186

Int. Cl.³ G01D *15/00*

U.S. Cl. 346—155 **2 Claims**

1. An electrostatic write head which comprises:

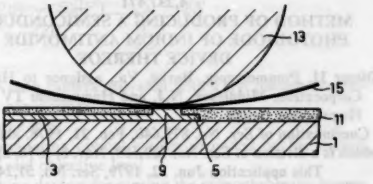
an insulating plate having at least one major surface,

a plurality of conductor tracks disposed on said one major surface,

each track of said plurality of conductor tracks comprising a first end portion having at least first and second axial portions, said first axial portion having a cross-section which has a greater area than the area of any other cross-section at any other axial portion thereof, said first axial portion comprising a write electrode,

each first end portion of each track of said plurality of conductor tracks being coplanar with a part of the conductor track to which it is connected in said plurality of conductor tracks,

each conductor track in said plurality of conductor tracks being disposed in physically spaced relation from every other conductor track in said plurality of conductor tracks on said one major surface and having no magnetically or electrically conductive paths between any two conductor tracks in said plurality of conductor tracks on said one major surface, each of said end portions being mutually parallel,



said first end portions being disposed in an elongated strip-shaped region which extends along the central portion of said one major surface,

each of said first end portions extending perpendicularly to the longitudinal direction of said region,

each conductor track in said plurality of conductor tracks extending from said strip-shaped region in only a single direction,

each successive conductor track in said plurality of conductor tracks extending from said strip-shaped region in opposite directions, at least said first end portion of each conductor track in said plurality of conductor tracks being covered by an insulating layer with the exception of said first axial portion.

4,237,470

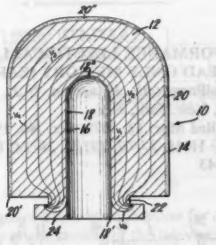
HYPERPURE GERMANIUM COAXIAL RADIATION DETECTOR

Thomas W. Raudorf, Oak Ridge, Tenn., assignor to ORTEC Incorporated, Oak Ridge, Tenn.

Filed Mar. 20, 1978, Ser. No. 888,236

Int. Cl.² H01L *27/14*

U.S. Cl. 357—30 **7 Claims**



1. A radiation detector comprising a semiconductor having generally the shape of a hollow cylinder with an outer generally cylindrical surface and an inner generally cylindrical surface and being formed with a p^+ contact and an n^+ contact, the p^+ contact being on the outer cylindrical surface and the n^+ contact being on the inner cylindrical surface, said contacts being generally cylindrical and coaxial, the respective cylin-

ders formed by each of said contacts being open at at least one end thereof, said open ends being adjacent to each other, and one of said contacts being a thin contact, characterized in that the radially-outer portion of the semiconductor is formed with a rim-like axial extension beyond the open end of the n^+ contact, and that the semiconductor is formed with an annular groove coaxial with the contacts and extending to a position which is closely spaced apart from the thin contact and inward of the open end of the thin contact, whereby, when a reverse bias is applied across the semiconductor between the contacts, the resulting equipotential lines are relatively crowded at the groove, the electric field is of reduced strength adjacent the open end of the thin contact, and reverse leakage current is inhibited.

4,237,471

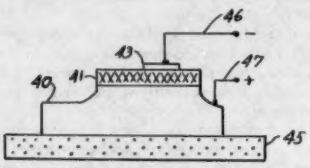
METHOD OF PRODUCING A SEMICONDUCTOR PHOTODIODE OF INDIUM ANTIMONIDE AND DEVICE THEREOF

Dieter H. Pommerrenig, Burke, Va., assignor to Hamamatsu Corporation, Middlesex, N.J. and Hamamatsu TV Co, Ltd., Hamamatsu, Japan

Continuation of Ser. No. 879,640, Feb. 21, 1978, abandoned, which is a division of Ser. No. 739,659, Nov. 8, 1976, abandoned. This application Jun. 22, 1979, Ser. No. 51,245

Int. Cl.[2] H01L *27/14*

U.S. Cl. 357—30 **6 Claims**



1. An infrared photodiode, comprising

a substrate of indium antimonide of one type of conductivity;

an epitaxial layer on said substrate of another type conductivity and of indium antimonide having the antimony partially replaced with arsenic or phosphorus and having the general formula InM_xSb_{i-x} wherein M is arsenic or phosphorus, and "x" is between 0.01 to 0.05; and wherein said epitaxial layer forms the detecting surface for the detection of infrared radiation;

an ohmic contact on said epitaxial layer; and

an electrode connected directly or indirectly to said substrate.

4,237,472

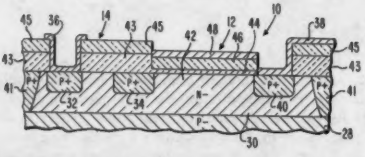
HIGH PERFORMANCE ELECTRICALLY ALTERABLE READ ONLY MEMORY (EAROM)

Richard J. Hollingsworth, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,586

Int. Cl.[3] H01L *27/02, 29/72, 29/34;* H03K *5/00*

U.S. Cl. 357—43 **9 Claims**



1. An integrated circuit memory comprising:

(A) a plurality of integrated circuit memory cells formed in a body of semiconductor material in an x-y array, each of which comprises:

(i) a metal-nitride-oxide-semiconductor (MNOS) transistor comprising:

(a) a semiconductor layer of a first conductivity type having a pair of spaced regions of opposite conductivity type formed therein, said spaced regions extending to a surface of said semiconductor layer;

(b) a first insulating layer on the surface of said semiconductor layer, said first insulating layer extending at least between said pair of spaced regions;

(c) a second insulating layer on the surface of said first insulating layer; and

(d) a conductive gate on the surface of said second insulating layer; and

(ii) a bipolar transistor comprising:

(a) an emitter region of said opposite conductivity type, said emitter region comprising one of said spaced regions;

(b) means for contacting said semiconductor layer, which semiconductor layer comprises the base of said bipolar transistor;

(c) a collector region of said opposite conductivity type, said collector region extending into said semiconductor layer from a surface thereof, said collector region not lying between said pair of spaced regions and said collector region being separated from the one of said pair of spaced regions nearest to said collector region by a distance equal to the base width of said bipolar transistor; and

(d) means for contacting said collector region; and

(B) means for addressing an individual one of said plurality of cells, said means for addressing comprising a first series of conductive metal lines extending over the surface of the substrate in one direction and a second series of conductive metal lines extending over the surface of said substrate in a direction orthogonal to said one direction, said second series of conductive metal lines not extending over or under said first series of conductive metal lines, said second series of conductive metal lines being connected to conductive diffused regions which extend under said first series of conductive metal lines.

4,237,473

GALLIUM PHOSPHIDE JFET

Alice M. Chiang, Framingham, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 762,533, Jan. 26, 1977, abandoned. This application Dec. 22, 1978, Ser. No. 972,298

Int. Cl.[3] H01L *29/161*

U.S. Cl. 357—61 **33 Claims**

1. A field-effect transistor comprising:

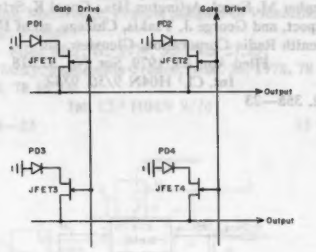
a body of GaP having a first conductivity type except in selected regions thereof;

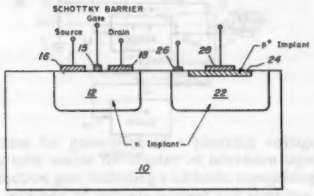
a channel region in one of the selected regions in the body being of a second conductivity type with this second conductivity type of the channel region being opposite the first conductivity type of the body, the channel region doped to provide therein a carrier concentration of $<1\times10^{17}$ carriers/cm3;

a pair of second conductivity type regions, separated by and joined to the channel region, which are capable of serving at least as source and drain regions into which and out of which primary currents through the field-effect can pass upon the source and drain regions being electrically energized; and

a gate region sufficiently adjacent the channel region to be

capable of affecting, upon being electrically energized, any current flow occurring through the channel region as





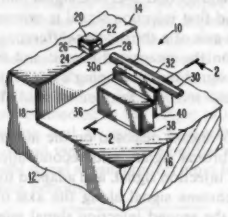
a result of any electrical energization of the source and drain regions.

4,237,474

ELECTROLUMINESCENT DIODE AND OPTICAL FIBER ASSEMBLY

Ivan Ladany, Stockton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,350
Int. Cl.³ H01L *33/00, 23/02, 23/12*
U.S. Cl. 357—81 **9 Claims**



1. In an electroluminescent semiconductor diode assembly which includes an electroluminescent semiconductor diode mounted on a mounting block, an optical fiber mounted on a separate mounting block with an end of the optical fiber being adjacent to and aligned with a light emitting end surface of said diode and at least one layer of a cement securing the optical fiber mounting block to the diode mounting block, the improvement comprising:

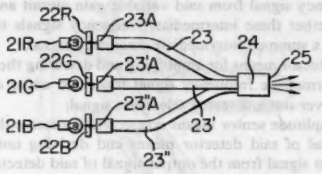
said cement layer being thin enough to minimize movement of the mounting blocks relative to each other upon curing of the cement but thick enough to allow ease of moving the blocks relative to each other prior to curing of the cement.

4,237,475

TELEVISION CAMERA WITH TEST PATTERN

Takeshi Sekiguchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 888,780, Mar. 21, 1978, abandoned.
This application Mar. 26, 1979, Ser. No. 24,035
Claims priority, application Japan, Mar. 10, 1977, 52-34945; Mar. 29, 1977, 52-47097; Apr. 22, 1978, 53-27386
Int. Cl.³ H04N *9/04*
U.S. Cl. 358—10 **9 Claims**



1. A television camera provided with a test pattern projecting device, comprising:

an objective lens;

a color-separating optical system provided on the optical axis of said objective lens;

image-taking devices for sensing the monochromatic images formed by said objective lens and said color-separating optical system;

a test pattern chart projecting means including a light source for illuminating said test pattern chart, a lens means for forming images of said test pattern on said image-taking devices, a means for forming plural color component light beams within said projecting means, a means for regulating intensity of at least one of said plural color component light beams, and a means for again uniting said plural light beams; and

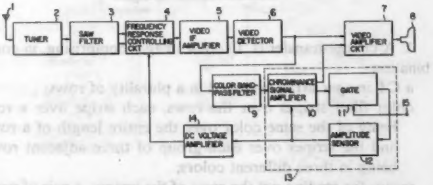
a deflecting means for deflecting the optical axis of said test pattern chart projecting apparatus so as that said optical axis coincides with the optical axis of said objective lens.

4,237,476

AUTOMATIC TILT CONTROL CIRCUIT FOR TELEVISION RECEIVERS

Kentaro Hanma, Yokohama, Japan, and Takeshi Murakami, Ridgewood, N.J., assignors to Hitachi, Ltd., Japan

Filed Apr. 18, 1979, Ser. No. 31,304
Claims priority, application Japan, Apr. 20, 1978, 53/47549
Int. Cl.³ H04N *9/537*
U.S. Cl. 358—38 **5 Claims**



1. A control circuit of a television receiver for correcting the frequency response characteristic of the television signal comprising:

(a) An SAW filter including an input electrode set connected to receive an intermediate frequency signal from a tuner, and first and second output electrode sets for delivering out the intermediate frequency signal received by the input electrode set, delivery of the intermediate frequency signal from said second output electrode set being delayed a predetermined time with respect to delivery of the inter-

mediate frequency signal from said first output electrode set;

(b) a variable gain circuit connected to receive the intermediate frequency signal from said second output electrode set of said SAW filter and varying the amplitude of the intermediate frequency signal to deliver out an amplitude varied intermediate frequency signal;

(c) an adder circuit connected to receive the intermediate frequency signal from said first output electrode set of said SAW filter and the amplitude varied intermediate frequency signal from said variable gain circuit and adding together these intermediate frequency signals to deliver out a summed intermediate frequency signal;

(d) detector means for amplifying and detecting the summed intermediate frequency signal from said adder circuit to deliver out a detected television signal;

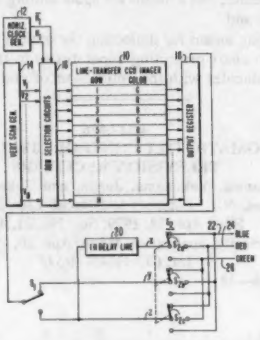
(e) amplitude sensor means connected to receive the output signal of said detector means and deriving out a color burst signal from the output signal of said detector means to generate a DC voltage whose level depends on the amplitude of the color burst signal; and

(f) means for applying the DC voltage generated by said amplitude sensor means to said variable gain circuit to vary the amplitude of the intermediate frequency signal.

4,237,477
CHARGE TRANSFER IMAGER

Paul K. Weimer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,454
Int. Cl.[3] H04N 9/07
U.S. Cl. 358—44 **3 Claims**



1. A charge-transfer (CT) color imager comprising, in combination:

a CT imager array arranged in a plurality of rows;

color filter stripes over the rows, each stripe over a row being of the same color over the entire length of a row, and the stripes over each group of three adjacent rows being in three different colors;

means for reading out the rows of the imager, a pair of rows at a time;

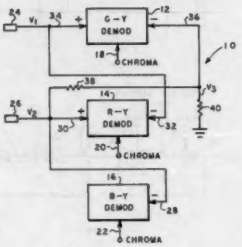
means for delaying for one line time, the signals read from the last row of each pair of rows read out; and

means for selecting color signals to be combined comprising, means for producing, during each of successive intervals in each line time, signals read from successive locations along the pair of rows then being read out, and the signals delayed one line time read from corresponding locations of the preceding row of the pair of rows read out during the previous line time.

4,237,478
I.C. CHROMA INJECTION AND DEMODULATION SYSTEM

Christopher M. Engel, Arlington Hts.; Gopal K. Srivastava, Mt. Prospect, and George J. Tzakis, Chicago, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 23, 1979, Ser. No. 32,318
Int. Cl.[3] H04N 9/50, 9/52
U.S. Cl. 358—23 **13 Claims**



1. In an integrated circuit receiving chroma and oscillator injection signals for developing three color-difference signals, an injection and demodulation system, comprising:

means external to the integrated circuit for applying thereto, via a first input pin, a first oscillator injection signal whose phase vector is oriented along the demodulation axis of a selected color-difference signal;

means external to the integrated circuit for applying thereto, via a second input pin, a second oscillator injection signal whose magnitude and phase is selected such that a signal vector comprising the vector difference of said first injection signal minus said second injection signal is oriented along the demodulation axis of a second color-difference signal, and such that a signal vector comprising the vector difference of said second injection signal minus a selected fraction of said first injection signal is oriented along the demodulation axis of a third color-difference signal;

means located on the integrated circuit and receiving the first injection signal for developing a third injection signal comprising said selected fraction of said first injection signal;

first demodulator means disposed on the integrated circuit, receiving a chroma signal, said second injection signal, and said third injection signal, and adapted to demodulate its received chroma signal along the axis of the vector difference of the second injection signal minus the third injection signal;

second demodulator means disposed on the integrated circuit, receiving a chroma signal, said first injection signal and said second injection signal, and adapted to demodulate its received chroma signal along the axis of the vector difference to the first injection signal minus said second injection signal;

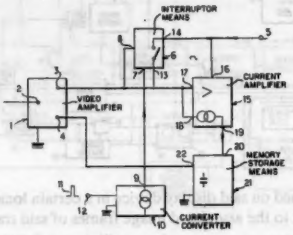
third demodulator means disposed on the integrated circuit, receiving a chroma signal and the first injection signal, and adapted to demodulate its received chroma signal along the axis of said first injection signal;

whereby the chroma signal is demodulated to develop three color-difference signals by utilizing only two input pins for applying the injection signals to the integrated circuit.

4,237,479
BLANKING VOLTAGE GENERATOR FOR A CATHODE RAY TUBE

Andre Lavigne, Montrouge, France, assignor to Videocolor S.A., Montrouge, France

Filed Mar. 16, 1979, Ser. No. 21,251
Claims priority, application France, Mar. 16, 1978, 78 07703; Jun. 5, 1978, 78 16770
Int. Cl.³ H04N 9/16
U.S. Cl. 358—33 13 Claims



1. Apparatus for generation of a blanking voltage for a cathode ray tube usable for display of television signals and having an electron gun, including a cathode, comprising means sensitive to intensity of cathode current and sampling meand connected for enabling said means sensitive to intensity of cathode current at periods during which a video signal applied to said cathode is equal to zero, and control means for modifying said blanking voltage according to said intensity in such a manner as to blank the beam current when the video signal is equal to zero, characterized by:

(a) a video voltage amplifier means for applying said video voltage and said blanking voltage signals to the cathode of said electron gun, said video voltage amplifier having an output and a control input, the control means comprising:

(i) means for servo-control of said blanking voltage including a feedback loop between: (a) a connection joining the output of said video voltage amplifier to said cathode, and (b) said control input of said video voltage amplifier means,

(ii) said feedback loop comprising a current amplifier means for increasing the cathode current,

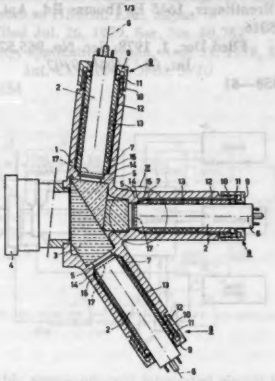
(iii) said current amplifier means having an input and an output and further having an output impedance that is high in relation to the output impedance of said video voltage amplifier means, the input circuit of said current amplifier means being connected to the connection joining said cathode to the output of said video voltage amplifier means; and (b) memory storage means having an input connected to the output of said current amplifier means, and an output connected to said control input of said video voltage amplifier means, to maintain a control signal at said control input between successive sampling periods.

4,237,480
TELEVISION CAMERA WITH PICK-UP TUBE MOUNTING MEANS

Adrianus J. J. Franken, and Wolter W. J. Degger, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,610
Claims priority, application Netherlands, Jun. 19, 1978, 7806570
Int. Cl.³ H04N 9/04
U.S. Cl. 358—55 6 Claims

1. A television camera in which a color splitting prism and a plurality of pick-up tubes are positioned with respect to each other in a holder which comprises a plurality of annular seats for optical alignment of each respective pick-up tube, each of said pick-up tubes having an adapter ring, which is connected to the tube transversely of the tube axis, for engaging said respective seat, and a resilient pressure member, acting in the

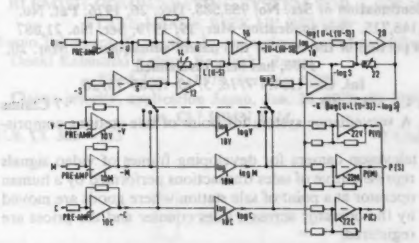


direction of the tube axis, for pressing said adapter ring against said seat, wherein the diameter of the parts of the seat and the adapter ring which are to be pressed together decreases in the pressing direction.

4,237,481
IMAGE REPRODUCTION USING SHARP AND UNSHARP SIGNALS

John E. Aughton, London, England, assignor to Crosfield Electronics, Ltd., London, England

Filed Sep. 20, 1979, Ser. No. 77,225
Claims priority, application United Kingdom, Sep. 26, 1978, 38154/78
Int. Cl.³ H04N 1/40
U.S. Cl. 358—80 8 Claims



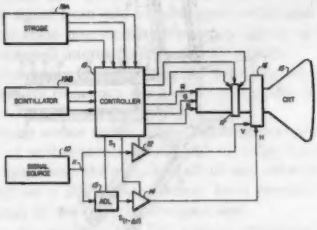
1. A method of image reproduction, in which a picture signal used to form the reproduction is derived from sharp and unsharp signals by subtracting the sharp signal from the unsharp signal to obtain a first difference, adding a multiple between 0.4 and 2.0 of this first difference to the unsharp signal to obtain a first sum, subtracting a multiple $(1+K)$ of a predetermined function of the sharp signal from a multiple K of the same function of the said first sum, the resulting picture signal being thereafter used with or without tone and/or colour correction to control the reproduction of the image.

4,237,482

DISPLAY SYSTEM FOR ACHIEVING AESTHETICALLY PLEASING LISSAJOUS PATTERNS FROM A SINGLE SOURCE OF SIGNALS

Brent R. Brentlinger, 1645 E. Thomas Rd., Apt. 409, Phoenix, Ariz. 85016

Filed Dec. 1, 1978, Ser. No. 965,570
Int. Cl.³ H04N *9/02*
U.S. Cl. 358—81 **19 Claims**



1. A display system using a single source of signals to achieve aesthetically pleasing Lissajous patterns on a multi-color phosphor screen of a color cathode ray tube (CRT), said CRT having the necessary associated power supply and first and second deflection means to provide an intensity controlled, visually discernible image on said screen in response to signals applied to said first and second deflection means comprising:

(a) means for inputting a signal from a single source into said display system;

(b) means for communicating said signal directly to first deflection means of a multi-color phosphor CRT, and through

(c) time delay means to second deflection means of said CRT;

whereby Lissajous figures are formed on the screen of said CRT, and:

(d) hue control deflection means for establishing the color tone of the Lissajous figures displayed.

4,237,483

SURVEILLANCE SYSTEM

Eric C. Clever, Haddonfield, N.J., assignor to Electronic Management Support, Inc., Haddonfield, N.J.

Continuation of Ser. No. 753,588, Dec. 26, 1976, Pat. No. 4,145,715. This application Mar. 19, 1979, Ser. No. 21,887
The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.
Int. Cl.³ H04N *7/18, 5/30*; G06F *15/20*
U.S. Cl. 358—108 **7 Claims**

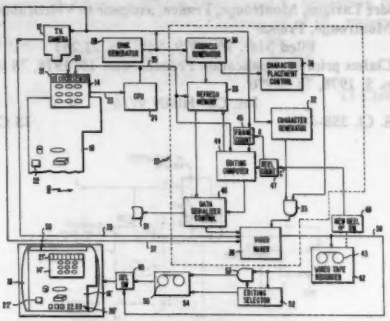
1. A surveillance system for point of sale stations comprising:

a television camera for developing frames of video signals representative of sales transactions performed by a human operator at a point of sale station where goods are moved by the operator across a sales counter and the prices are registered;

means including at least one operator-controlled register for developing digital electronic signals representing data including price information entered by said operator at said point of sale station about said sales transactions concurrently with the development of said video frames;

a video display device for visually displaying image frames of said transactions corresponding to and from associated frames of composite signals;

and control means for generating a set of video character signals from said digital data signals of each of said sales transactions and for forming each of said frames of composite signals from one of said frames of video signals and a set of said character signals of the same transactions in a certain relation so that the associated character images are



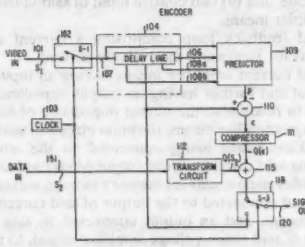
positioned on said display device in a certain location with relation to the associated image frames of said transaction.

4,237,484

TECHNIQUE FOR TRANSMITTING DIGITAL DATA TOGETHER WITH A VIDEO SIGNAL

Earl F. Brown, Piscataway, and Arun N. Netravali, Matawan, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 8, 1979, Ser. No. 64,918
Int. Cl.³ H04N *7/08*
U.S. Cl. 358—142 **15 Claims**



1. Apparatus for transmitting digital data together with a sampled video signal comprising:

means (**109**) for predicting the value of each of a first set of samples of said video signal based upon the value of other ones of said video signal samples;

means (**110**) for computing the prediction error between the value of each sample in said first set and the corresponding predicted value thereof;

means (**111**) for compressing said error to a range narrower than the range of said video signal;

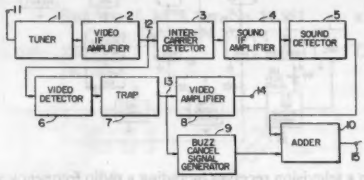
means (**112, 115**) for superimposing a value indicative of said digital data on each of said compressed errors, whereby the composite value uniquely indicates the digital data; and

means (**118**) for time multiplexing said composite values with the values of said other ones of said video samples.

4,237,485
BUZZ CANCELLING SYSTEM FOR TELEVISION RECEIVER

Hiroshi Saito, Katano, and Chihiro Adachi, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 15, 1979, Ser. No. 3,539
Claims priority, application Japan, Jan. 19, 1978, 53-5075; Oct. 16, 1978, 53-127542
Int. Cl.³ H04N 5/60
U.S. Cl. 358—197 5 Claims

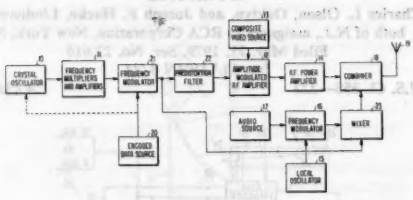


1. A system for cancelling out buzz component from a sound signal in a television receiver, comprising: means for producing a sound IF signal through detection of a video IF signal, means for producing a sound signal by detecting said sound IF signal, means for producing a video signal by detecting said video IF signal, a buzz component cancelling a signal generator circuit for producing a buzz cancelling signal by detecting phase-modulated components of said video IF signal, and adder means for adding said buzz cancelling signal to said sound signal, whereby the buzz component contained in said sound signal is cancelled.

4,237,486
COMPATIBLE TRANSMISSION OF AN ENCODED SIGNAL WITH A TELEVISION

Richard L. Shimp, Waynesboro, Va., assignor to ComSonics, Inc., Harrisonburg, Va.

Filed Nov. 9, 1978, Ser. No. 959,277
Int. Cl.³ H04N 7/08
U.S. Cl. 358—142 49 Claims



1. A method of compatibly and simultaneously transmitting an encoded signal with the normal visual carrier of a television signal comprising the steps of

generating a visual carrier frequency signal,

frequency modulating the visual carrier frequency signal over a narrow bandwidth with a source of encoded signal,

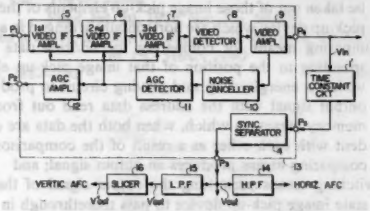
amplitude modulating the frequency modulated visual carrier frequency signal with a source of composite video signals, and

transmitting the frequency and amplitude modulated visual carrier frequency signal.

4,237,487
MONOLITHIC SEMICONDUCTOR INTEGRATED CIRCUIT FOR TELEVISION RECEIVERS

Tsuneo Ikeda, Kodaira, and Yasuhiro Nunogawa, Fuchu, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 26, 1979, Ser. No. 60,752
Claims priority, application Japan, Aug. 21, 1978, 53/100942
Int. Cl.³ H04N 5/08, 5/10
U.S. Cl. 358—154 7 Claims



1. A monolithic semiconductor integrated circuit for television receivers comprising:

a high-frequency amplifier circuit for amplifying video intermediate-frequency signals, wherein an input terminal of said high-frequency amplifier circuit is connected to an externally located input terminal of said monolithic semiconductor integrated circuit;

a video detector circuit which receives the output signals of said high-frequency amplifier circuit and produces composite video signals as detected outputs;

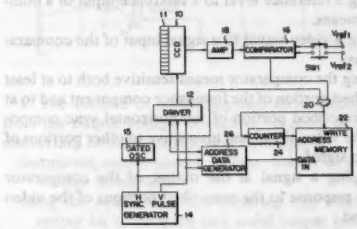
a syn separator circuit which receives the detected outputs of said video detector circuit and produces syn separation output signals to an externally located output terminal of said monolithic semiconductor integrated circuit; and

a low-pass filter connected between said externally located output terminal and the output of said syn separator circuit, wherein the time constant of said low-pass filter has been so selected that the resulting syn separation output signals will have a pulse width nearly equal to the pulse width of horizontal syn pulses in said composite video signals and have reduced harmonic components of said horizontal syn pulses.

4,237,488
BLEMISH COMPENSATING SYSTEM FOR A SOLID STATE IMAGE PICK-UP DEVICE

Yasuo Takemura, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 8, 1979, Ser. No. 1,836
Claims priority, application Japan, Jan. 20, 1978, 53-4284
Int. Cl.³ H04N 5/34
U.S. Cl. 358—163 7 Claims



1. A blemish compensating system used for a solid state image pick-up device having a plurality of image pick-up elements which are arranged to store electric charges corre-

sponding to an optical image formed on the light sensitive portions thereof and are sequentially energized by a driving circuit in response to an output signal from a control signal generating means to derive out the electric charges stored on the respective image pick-up elements, comprising:

memory means for storing address data representing the position of a defective solid state image pick-up element or elements;

delay means for delaying the output signal from said image pick-up device by a time required for electrical signals to be taken out of those image pick-up elements of the image pick-up device which are horizontally arranged in a series;

comparing means for comparing the address data corresponding to the position of that image pick-up element which is energized by said driving circuit to produce an output signal with the address data read out from said memory means, in which, when both the data are coincident with each other as a result of the comparison, said comparing means produces an output signal; and

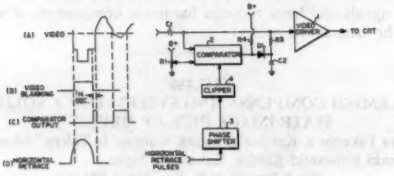
switching means permitting the output signal of the solid state image pick-up device to pass therethrough in a first switching position, and responding to the output signal from said comparing means to be set to a second switching position, thereby permitting the output signal from the solid state image pick-up device to pass therethrough by way of said delay means.

4,237,489

VIDEO BLACK LEVEL REFERENCE SYSTEM

John M. Kresock, Elba, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Feb. 26, 1979, Ser. No. 15,024
Int. Cl.³ H04N 5/19
U.S. Cl. 358—168 **8 Claims**



1. A method of effecting automatic brightness control for a television receiver comprising the steps of:

(a) applying a reference level to a reference input of a comparator means;

(b) coupling a video signal to a signal input of the comparator means;

(c) rendering the comparator means sensitive both to at least a prescribed portion of the luminance component and to at least a prescribed portion of the horizontal sync component of the video signal and insensitive to other portions of the video signal;

(d) developing a signal at the output of the comparator means in response to the prescribed portions of the video signal; and

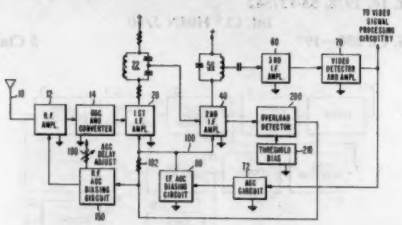
(e) coupling the developed signal to the receiver's CRT so that effective automatic brightness control is achieved regardless of luminance components corresponding to substantially white scenic representations.

4,237,490

SIGNAL OVERLOAD PREVENTION CIRCUIT

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,326
Int. Cl.³ H04N 5/52
U.S. Cl. 358—174 **9 Claims**



1. In a television receiver including a radio frequency amplifying stage; means coupled to said radio frequency amplifying stage for converting a radio frequency signal to an intermediate frequency signal; an intermediate frequency amplifying stage coupled to said converting means, to which an intermediate frequency signal of amplitude sufficient to overload said stage may be applied; and an automatic gain control system including means responsive to the level of a detected video signal for developing an AGC control signal, means responsive to said AGC control signal for controlling the gain of said intermediate frequency amplifying stage, and means responsive to said AGC control signal for controlling the gain of said radio frequency amplifying stage; apparatus comprising:

an overload detector, coupled to said intermediate frequency amplifying stage and independent of said AGC control signal developing means, for generating an overload signal whenever said intermediate frequency signal exceeds a threshold level;

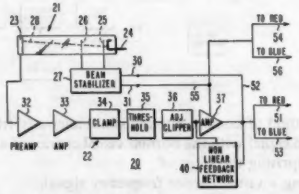
and means for utilizing said overload signal to reduce the gain of said radio frequency amplifying stage without affecting the gain of said gain controlled intermediate frequency amplifying stage, said overload signal utilizing means comprising means for rendering said radio frequency amplifying stage gain controlling means additionally responsive to said overload signal when generated.

4,237,491

TELEVISION CAMERA HIGHLIGHT DISCHARGE APPARATUS

Charles L. Olson, Oaklyn, and Joseph F. Hacke, Lindenwold, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 21, 1979, Ser. No. 22,616
Int. Cl.³ H04N 5/34
U.S. Cl. 358—223 **4 Claims**



1. An apparatus for discharging an image highlight in a television camera pickup tube, comprising:

(A) means coupled to said pickup tube for forming an electrical signal representative of said highlight;

(B) signal shaping means responsive to said electrical signal, for providing a control signal; and

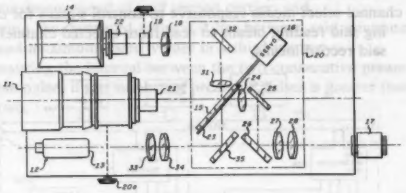
(C) a beam current stabilizer means normally providing a substantially constant scanning beam current, said stabilizer means including circuit means responsive to said control signal for providing increased scanning beam current during the trace period in the presence of said image highlight.

4,237,492

IMAGE OBSERVATION APPARATUS

Irving Roth, Williston Park, and Ralph Davidson, Old Bethpage, both of N.Y., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 2, 1979, Ser. No. 16,991
Int. Cl.³ H04N 7/18
U.S. Cl. 358—225 **7 Claims**



1. An apparatus for viewing a multiplicity of images comprising:

first and second image generating means:

first and second means for receiving optical images; and

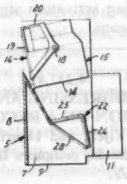
beam splitting means positioned in the optical paths of images generated by said first and second image generators for directing said images to said first and second optical image receiving means, said beam splitting means for controllably reflecting and transmitting portions of a light beam incident thereto to vary the percentages of said incident light beam reflected and transmitted, the range of said variations including substantially 0% reflection and substantially 100% transmission.

4,237,493

TELEVISION SUPPORT AND PICTURE PROJECTOR

Roger H. Appeldorn, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 23, 1978, Ser. No. 953,617
Int. Cl.³ H04N 5/74, 5/64; G03B 21/00; H05K 5/00
U.S. Cl. 358—237 **5 Claims**



1. A television support and picture projection structure comprising

a frame having a pair of transversely spaced vertical members, each with a lower support area,

means on said members for pivotally supporting a television set for movement from a first position with the screen disposed generally vertically to a second position with the screen disposed below the set and generally horizontally, and

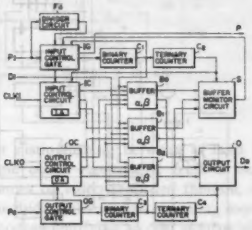
projection lens means, supported by said members and disposed below said means for supporting a television set and between said means for supporting a television set and said lower support areas, for projecting an image from said screen when a said television set is in said second position to a remote screen.

4,237,494

FACSIMILE SYSTEM

Shingo Yamaguchi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 20, 1979, Ser. No. 59,478
Claims priority, application Japan, Jul. 20, 1978, 53-87653
Int. Cl.³ H04N 1/40
U.S. Cl. 358—280 **7 Claims**



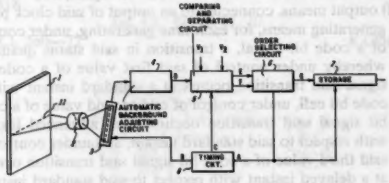
1. In a facsimile system provided with at least a scanner, a printer, a buffer apparatus, a data compression apparatus and a data expansion apparatus, which performs read scanning, record scanning and transmission processing of image element data, line by line, using a subscanning pulse motor for subscanning, the improvement wherein the suspension time of said subscanning pulse motor for use in at least either the read scanning or the record scanning is set so as to be equivalent to a minimum scanning for two lines of said image element data.

4,237,495

CIRCUIT FOR DOUBLING THE NUMBER OF OUTPUT BITS OF A PHOTODIODE ARRAY

Akimitsu Yamamoto, Ebina, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 15, 1979, Ser. No. 20,887
Claims priority, application Japan, Mar. 22, 1978, 53-32540
Int. Cl.³ H04N 1/40; G06K 9/00
U.S. Cl. 358—282 **5 Claims**



1. The method of producing two serial binary output bits from the output voltage of each of an array of photoelectric converting elements comprising the steps of:

comparing each element voltage output to two reference voltage levels, and

using the results of said comparing step and the previous output bit to produce two serial output bits, (a) the two bits being both 1's or both 0's if the element output voltage is above the higher reference, or below the lower reference, respectively, or (b) the two bits being a 1 and a 0, or a 0 and a 1, if the element output voltage is between the

reference levels, and the last previously produced output bit was a 1 or a 0, respectively.

4,237,496

DEVICE FOR CODING/DECODING DATA FOR A MEDIUM

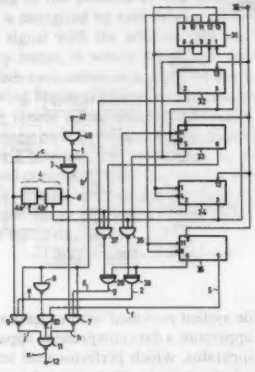
Edmond De Niet, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1979, Ser. No. 5,883

Claims priority, application Netherlands, Jan. 30, 1978, 7801042

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—40 **4 Claims**



1. A device for introducing digital data into a medium by means of a bivalent status quantity thereof, said device comprising:

(a) an input for receiving an interleaved data stream of even data bits and odd data bits;

(b) clock pulse generating means for producing for each bit cell, in synchronism with the data bits received, at least one clock signal;

(c) coding means for, within the stream of said even data bits, imparting to a first value of a data bit a first value of a code bit signal and to a second value of a data bit an element of a first alternating succession of second and third values of a code bit signal, and, within the stream of said odd data bits, imparting to the first value of a data bit the first value of a code bit signal and to the second value of a data bit an element of a second succession of the second and third values of a code bit signal; and

(d) output means, connected to an output of said clock pulse generating means, for each time generating, under control of a code bit signal, a transition in said status quantity, whereby under control of said first value of a code bit signal said transition occurs at a standard instant with a code bit cell, under control of said second value of a code bit signal said transition occurs at an advanced instant with respect to said standard instant, and under control of said third value of a code bit signal said transition occurs at a delayed instant with respect to said standard instant.

4,237,497

PROGRAMMABLE MULTI-CHANNEL AUDIO PLAYBACK SYSTEM

Richard W. Trevithick, 1730 E. Woodside Dr., Salt Lake City, Utah 84117

Filed Aug. 11, 1978, Ser. No. 932,781

Int. Cl.³ G11B *15/16, 15/52, 27/22*

U.S. Cl. 360—72.1 **12 Claims**

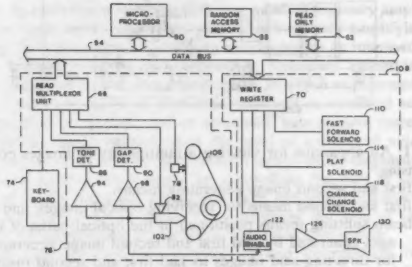
1. A programmable multi-channel audio playback system for tape decks and the like comprising

record means having a multiplicity of channels on which segments or portions of segments of information are serially recorded, each serially adjacent pair of segments being separated by a numbered gap, wherein said record means has recorded thereon a table of contents which includes information identifying each segment of information recorded on the record means, information identifying the number of the gaps preceding each segment of information, information identifying which channel each segment of information begins on, and information indicating what sequence position, from a common position on the record means, each segment of information occupies on the channel on which said each segment begins,

control means for causing the record means to move and for controlling such movement in response to control signals,

reading means for reading said information segments and said table of contents from the record means as the record means is moved,

channel select means responsive to control signals for causing said reading means to read from selected channels on said record means,



means coupled to said reading means for producing a gap indication signal when said reading means encounters a gap on said record means,

audio speaker means for aurally reproducing information segments applied thereto when activated by an activation signal,

keyboard means having a plurality of manually operable keys which, when operated, cause production of key signals, said key signals identifying information segments on the record means which are to be reproduced,

storage means for temporarily storing said key signals, and

a microprocessor responsive to said key signals and said gap indication signals for producing control signals for application to said control means and to said channel select means to control movement of the record means and the reading of information segments by the reading means, and for producing activation signals for activating said audio speaker means.

4,237,498

METHOD OF ADDRESSING AND/OR LOCATING INFORMATION ON A RECORD CARRIER

Gustavus L. P. van Eijck, and Henri J. L. Simons, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 25, 1979, Ser. No. 6,393

Claims priority, application Netherlands, Jan. 30, 1978, 7801041

Int. Cl.³ G11B *15/52, 23/36, 27/22*

U.S. Cl. 360—72.2 **9 Claims**

1. An improved method of addressing and locating information on a record carrier used in an information recording and playback system, the addresses being recorded in the form of digital pulse trains in the same track of said record carrier, wherein the improvement comprises:

recording an address with a sub-audo frequency at recording and playback speed on said record carrier by recording

consecutively at least two preamble pulses and a number of pulses and intervals, corresponding to the ones and zeros of the digitized address, and a number of post-amble pulses equal to the number of preamble pulses;

entering said address into a first address memory;

erasing simultaneously a previous address contained in said first address memory when entering said digitized address into said address memory;

starting the record carrier transport;

starting a pulse counter upon the first preamble pulse when an address passes a read head;

advancing said counter one step upon each subsequent pulse;

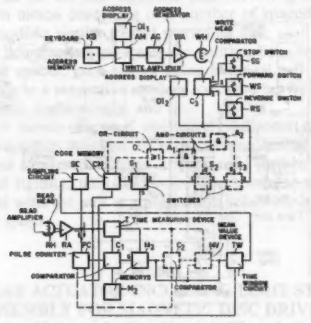
measuring the interval between the first two preamble pulses;

storing predetermined values in a second memory;

comparing said interval with values stored in said second memory, which values correspond to the minimum and maximum speed of said record carrier; and,

storing the measured value if it lies between said minimum and maximum speed values in a third memory;

measuring the interval between the two consecutive preamble pulses if the number of preamble pulses is greater than two,



determining whether a code pulse appears in a time window near the end of the subsequent intervals which are equal to the mean of the preamble intervals if, within certain limits, the measured values are equal to the interval between the first and second preamble pulse;

storing a binary value in a code memory, the value being a function of the appearance or non-appearance of a pulse in a time window;

advancing the pulse counter one step after each interval until said pulse counter reaches a count which is equal to the sum of the total member of preamble, code and post-amble pulses;

comparing the content of said code memory with the content of said address memory;

stopping the record carrier transport if said contents correspond in anticipation of re-starting at playback speed;

switching directly to playback speed; and

moving said record carrier forward if the content of said code memory is smaller than that of said address memory;

moving the record carrier in the reverse direction if the content of said code memory is greater than that of the address memory.

4,237,499

VIDEO TAPE CONTROL TIME CODE READING

Katsuichi Tachi, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

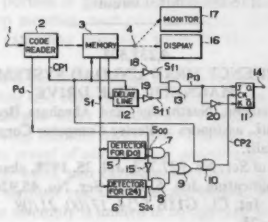
Filed Nov. 15, 1978, Ser. No. 960,855

Claims priority, application Japan, Nov. 18, 1977, 52-138757

The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.

Int. Cl.[2] G11B *15/52*

U.S. Cl. 360—73 **10 Claims**



1. A method for distinguishing between at least first and second control time codes reproduced from a video tape which contains frames of video recorded thereon, said first control time code including at least first repeating sequences of contiguous frame codes identifying an odd number of individual frames of said video, said second control time code including at least second repeating sequences of contiguous frame codes identifying an even number of individual frames of said video, comprising the steps of:

producing a first signal responsive to a reproduced frame code identifying an even frame number;

comparing said first signal with a second signal produced responsive to an immediately preceding frame code identifying an even frame number; and

producing a first output signal when the comparing step indicates that said first signal and said second signal both identify the same condition of oddness or evenness.

4,237,500

METHOD OF CONTROLLING THE POSITION OF A WRITE-READ HEAD AND DEVICE FOR CARRYING OUT THE METHOD

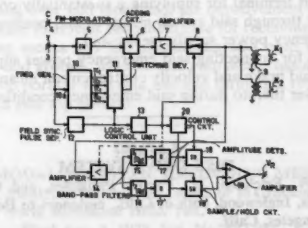
Hendrik J. Sanderson, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 24, 1979, Ser. No. 6,061

Claims priority, application Netherlands, Feb. 6, 1978, 7801318

Int. Cl.[3] G11B *21/10*

U.S. Cl. 360—77 **8 Claims**



1. A device for controlling the position of a write-read head in a recording apparatus relative to a record carrier while recording on said record carrier, said device comprising a write-read head for recording information on the record carrier, positioning means for controlling the relative position of

the write-read head with respect to information tracks being recorded on said record carrier in a direction transverse to said information tracks, and a control circuit for generating and applying a control signal to said positioning means, wherein the device further comprises a signal generator for applying, at least during a first time interval, a tracking signal to the write-read head, switching means for interrupting the supply of signals to the write-read head during a second time interval, and detection means for detecting the cross-talk signal during the second time interval, resulting from the tracking signal from the preceding information track, and for applying the detected signal to the control circuit.

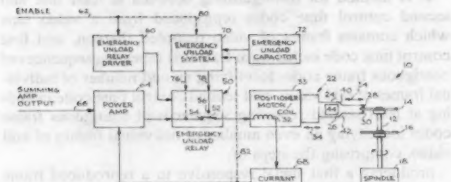
4,237,501
EMERGENCY HEAD UNLOAD SYSTEM FOR MAGNETIC DISK DRIVE

Evan L. Barmache, Northridge, and Abraham Brand, Encino, both of Calif., assignors to Pertec Computer Corporation, Los Angeles, Calif.

Continuation of Ser. No. 927,763, Jul. 25, 1978, abandoned. This application Jun. 6, 1979, Ser. No. 45,924

Int. Cl.[2] G11B *5/54, 17/00, 21/08*

U.S. Cl. 360—75 **11 Claims**



1. In a disk drive including a disk having a magnetic surface and a motor having a positioner coil for radially moving a head support structure along said disk surface, apparatus responsive to an emergency condition for causing said coil to rapidly move said support structure radially outwardly at a controlled velocity, said apparatus comprising:

switch means having first and second input terminals and including means capable of selectively defining a first state to connect said first input terminal to said positioner coil or a second state to connect said second input terminal to said positioner coil;

brake circuit means electrically connected to said first input terminal and responsive to a signal indicative of said emergency condition for reducing the velocity of said positioner coil toward zero;

means responsive to said emergency condition signal for switching said switch means from said first to said second state after a predetermined time delay;

velocity control circuit means connected to said second input terminal for supplying a substantially constant current through said switch means to said positioner coil;

emergency power supply means; and

means for connecting said emergency power supply means to said brake and velocity control circuit means to supply power thereto during said emergency condition.

4,237,502
DISK DRIVE SYSTEM

Robert W. Erickson, Jr., Pacific Palisades, and G. Randall Stevens, Inglewood, both of Calif., assignors to Per Sci, Inc., Los Angeles, Calif.

Filed Jul. 10, 1979, Ser. No. 56,243

Int. Cl.[3] G11B *21/08;* **G05B** *13/00*

U.S. Cl. 360—78 **8 Claims**

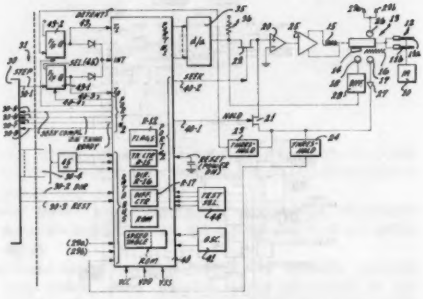
1. A disk drive having at least one spinning disk, a carriage for at least one transducer to be positioned adjacent to the disk for interaction therewith for data recording and/or retrieval, the carriage with the transducer being movable in radial direction for positioning above one of a plurality of concentric tracks on the disk; an electric motor for driving the carriage; and a control circuit for the motor comprising:

transducer means operatively coupled to the carriage for sensing the disposition of the carriage and producing a periodically variable output signal representative of the relative disposition of the carriage and the transducer thereon;

amplifier means connected to the motor for providing thereto a control signal for controlling the motor, further having an input means connected for receiving error type signals;

a first feedback loop including analog circuit means and connected to be responsive to said output signal and feeding it to the said input means, further including first gate means connected for enabling and disabling the first feedback loop;

a second feedback loop also connected to the output circuit of the transducer means and deriving from the output signal a train of pulses corresponding to the periodicity thereof, the pulses being representative of the passage of the carriage transducer across the tracks of the disk, the second feedback loop further including a microcomputer means having an interrupt input, there being circuit means



to connect the interrupt input to receive said train of pulses, the microcomputer having an output port, the second feedback loop further including a digital to analog converter to provide output signals to the input means in response to a digital signal on the port, there being second gate means connected for enabling and disabling the second feedback loop;

external circuit means connected to provide pulses to the interrupt means commanding and representing number of tracks over which the carriage transducer is to be moved;

first program means in the microcomputer for causing the content of a register in the computer to be incremented in response to the pulses as provided by the external circuit means and to be decremented in response to the pulses of the second feedback loop, the first program means including interrupt routines for the separate acceptance of the pulses from the external circuit means and from the second feedback loop;

second program means in the microcomputer for providing digital speed command signals to the said port in response to the content of the register; and

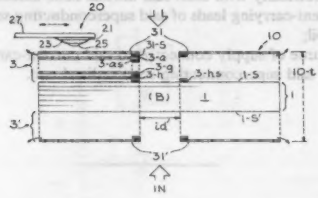
third program means for providing signals to the first and second gate means for enabling the first feedback loop in response to a particular content of the said register and for enabling the second feedback loop in response to a content of the register different from the particular content.

4,237,503

SEMI-RIGID MAGNETIC RECORDING DISK MODULE

Herbert U. Ragle, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 3, 1979, Ser. No. 680
Int. Cl.[3] G11B 5/016
U.S. Cl. 360—99 17 Claims



1. An improved floppy disk recording unit including at least one flexible magnetic recording disk characterized by a recording face adapted to "fly" over the aerodynamic face of a prescribed fixedly-held transducer for transduction thereby, the unit also including:

pneumatic flexible cushion means disposed adjacent each said disk on the side opposite said recording face, this cushion means consisting of a number of spaced flexible dummy-disks similar to said recording disk;

all disks being separated from one another by a respective annular spacer, each spacer being identical and radially-pervious to a respective air-flow, outward betwen respective disks, cushioningly; and

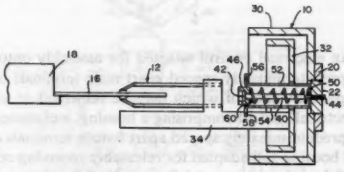
a support means disposed operatively adjacent each said cushion means opposite the respective recording disk and adapted to present thereto a "reference surface" of prescribed rigidity, uniform flatness and levelness when corotated with the unit at a prescribed, relatively high rotational speed.

4,237,504

LINEAR ACTUATOR INCLUDING LIMIT STOP ASSEMBLY FOR MAGNETIC DISC DRIVE

Bin L. Ho, Los Gatos, and Albert Guerini, Gilroy, both of Calif., assignors to Priam, Cupertino, Calif.

Filed Jan. 26, 1979, Ser. No. 6,777
Int. Cl.[2] G11B 21/08; G05G 5/06
U.S. Cl. 360—106 19 Claims



1. A limit stop assembly for use with linear actuator means to limit linear travel of a carriage assembly of said linear actuator means comprising

an elongated first stop member axially aligned with the linear travel of said carriage assembly and having an enlarged head portion on one end and a threaded portion on the other end,

an adjustable seat having an externally threaded surface for mating with a support plate of the linear actuator means and an internally threaded surface for receiving said threaded portion of said first stop member,

a cup shaped member having an open end and a partially closed end with the cup portion being of sufficient size to receive said enlarged head portion of said first stop member and said partially closed portion having an opening therethrough for receiving the body portion of said first stop member whereby said cup shaped member is slideably mounted on said first stop member with said enlarged head portion limiting travel thereof,

a second stop member including a generally planar central portion having an opening for receiving said first stop member and a plurality of fingers extending from said central portion in generally parallel alignment with said first stop member, each of said fingers including a stop surface extending generally perpendicular to said finger, and

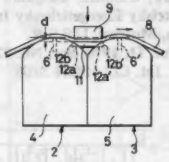
spring means positioned about said first stop member yieldably biasing said cup shaped member into engagement with said enlarged head portion and yieldably biasing said second stop member away from said cup shaped member whereby travel of said carriage assembly is limited in one direction when said carriage assembly engages said cup shaped member and said enlarged head and travel of said carriage assembly is limited in an opposite direction when said carriage assembly engages said stop surfaces of said fingers.

4,237,505

COMBINED RECORDING AND PLAYBACK MAGNETIC TAPE HEAD WITH SHIELD CASES AND A FLAT CHIP FOR CONTROLLING TAPE WRAP ANGLE

Yozo Yamada, and Michinori Narui, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 3, 1978, Ser. No. 957,503
Claims priority, application Japan, Nov. 5, 1977, 52-147953[U]
Int. Cl.[3] G11B 5/22, 5/28, 15/60
U.S. Cl. 360—122 7 Claims



1. In a magnetic tape head having a recording head and a playback head combined into a unitary element with associated shield cases for each head, said heads having generally arcuate front surfaces having a groove therebetween and chip means positioned in said groove for controling the wrap angle of a tape traveling over said tape head, the improvement comprising: slot means in at least one shield case for receiving one end of said chip means and for maintaining said chip means in position in said groove, wherein said chip means has a substantially flat top portion with said one end forming a rectangular corner with said top portion.

4,237,506

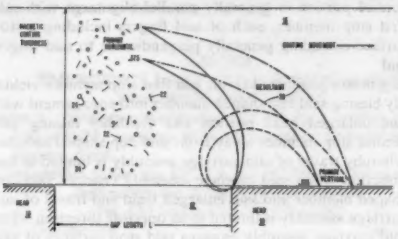
POLYMODAL MAGNETIC RECORDING MEMBER

William A. Manly, Arlington, Tex., assignor to Graham Magnetics Inc., North Richmond Hills, Tex.

Filed Apr. 3, 1978, Ser. No. 892,984
Int. Cl.[3] G11B 5/82; H01F 10/02
U.S. Cl. 360—135 7 Claims

1. In a polymodal magnetic recording member of the circular floppy disc type characterized by a polymodal combination of at least two population of magnetic particles the combination of which exhibits an unintegrated dM/dt curve having

peaks separated by valleys of a depth equal to at least one-half of the average height of the adjacent peaks over the base line, the improvement comprising a magnetic-recording coating having ferromagnetic particles in an organic resin binder, and said coating being up to about 100 microinches thick and comprising one population of magnetic particles, vertically-oriented within an upper zone and preferentially responsive to vertical magnetic flux lines in said zone, and wherein said vertically-oriented particles exhibits a squareness in the direc-



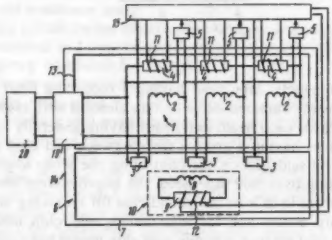
tion normal to the surface of the medium of at least about 0.65; and said coating also comprising, in addition to said vertically-oriented particles of at least one other magnetic material, which are preferentially responsive to a horizontal flux of a magnetic field in a lower zone, and which have a coercivity differing by at least 200 oersteds from said coercivity of said vertically oriented particles thereby enhancing the independent switching characteristics of each particle population in the polymodal combination.

4,237,507

SUPERCONDUCTING MAGNETIC SYSTEM

Eduard A. Meierovich; Pavel B. Shenderovich; Jury I. Chalisov; Valery A. Golenchenko; Igor V. Rybin, and Vitaly B. Sukhushin, all of Moscow, U.S.S.R., assignors to Gosudarstvenny Nauchnoissledovatelsky Energeticheskiy Institut Imeni G. M. Krzhizhanovskogo, Moscow, U.S.S.R.

Filed Jul. 11, 1978, Ser. No. 923,683
Int. Cl.[2] H02H *3/08*
U.S. Cl. 361—19 **8 Claims**



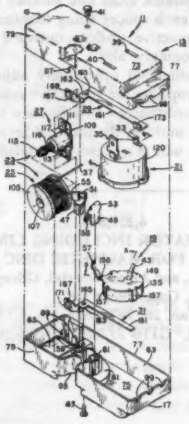
1. A superconducting magnetic system comprising:
a cryostat;
a cooled compartment placed in said cryostat;
a superconducting sectionalized coil arranged in said cooled compartment, each coil section having a series-connected disconnector, said coil section and series-connected disconnector being connected in parallel to a controlled shunt of superconducting material and a normal zone detection unit with an output, each said controlled shunt having an individual control winding linked electrically with the respective normal zone detection unit;
an energy removal device linked inductively with each said section of said superconducting sectionalized coil, said energy removal device comprising a compartment cooled to cryogenic temperature, heat-insulated from above-said cooled compartment and arranged likewise inside, said cryostat containing said disconnector of each said section, and at least one coil of normal metal arranged within said cryogenically cooled compartment and having a jumper of superconducting material connected with said coil of normal metal so as to make up a closed electric circuit, said jumper having an individual control winding linked electrically with each said normal zone detection unit;
current-carrying leads of said superconducting sectionalized coil;
a source of supply connected to said current-carrying leads of said superconducting sectionalized coil.

4,237,508

ELECTRICAL CONTROL

Lee O. Woods, Morrison, and Donald L. Haag, Sterling, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Filed Sep. 8, 1978, Ser. No. 940,589
Int. Cl.[3] H02H *7/085*
U.S. Cl. 361—24 **16 Claims**

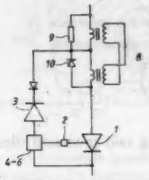


7. An electrical control adapted for assembly onto at least some predeterminately spaced apart male terminals of a clustered plurality thereof which may be subjected to vibration, the electrical control comprising a housing, a clustered plurality of predeterminately spaced apart female terminals disposed in said housing and adapted for releasably receiving respective ones of the at least some male terminals of the clustered plurality thereof when the electrical control is assembled onto the at least some male terminals; a relay device, a solid state starter device and an overload protector device connected in circuit relation in said housing and predeterminately supported in spaced relation in said housing with respect to said female terminals of said clustered plurality thereof so that the centers of gravity of said relay device, said solid state starter device and said overload protector device are generally balanced about said female terminals thereby to at least limit vibrational torque stressing of said female terminals in the event of the occurrence of the vibration of the at least some male terminals when the electrical control is assembled thereon.

4,237,509
THYRISTOR CONNECTION WITH OVERVOLTAGE PROTECTION

Gunnar Asplund, Ludvika, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed May 16, 1978, Ser. No. 906,509
Claims priority, application Sweden, May 17, 1977, 7705762
Int. Cl.³ H02H 3/20
U.S. Cl. 361—56 5 Claims



1. In an overvoltage protection circuit for a thyristor having an impedance means connected in parallel with the thyristor, the impedance of the impedance means decreasing from a first high value to a lower value in accordance with an impedance characteristic and in response to an increase in the voltage across the impedance means exceeding a predetermined value, the improvement of a circuit means for compensating for the non-ideal impedance characteristic of the impedance means comprising:

inductive means having a first winding connected in series with the thyristor only, and a second winding connected in series with the parallel connection of the thyristor and said impedance means,

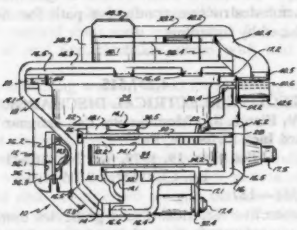
resistive means connected in parallel with said second winding for generating a voltage across the second winding when the impedance means is conducting with a low impedance,

said second winding being coupled to said first winding for generating a voltage in said first winding compensating for the resistive voltage drop in the impedance means.

4,237,510
ELECTRICAL SWITCHING APPARATUS

Herbert A. Thompson, Jr., Cumberland, R.I.; Ronald E. Senor, North Attleboro, and Louis C. Beggs, Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Attleboro, Mass.

Filed Dec. 29, 1978, Ser. No. 974,455
Int. Cl.³ H02H 7/085
U.S. Cl. 361—24 18 Claims



1. Combination motor protector and starter apparatus comprising a housing of electrically insulative material having a bottom wall and upstanding front, back and side walls attached thereto and terminating at an opened end, the walls forming a chamber therein, a groove formed in each side wall extending generally from the bottom wall to the open end, the grooves opposed to each and forming a pair,

a first terminal plate having two opposite edges slidably received in the pair of grooves and separating the chamber into a first and second portion, the plate having electrical contacting surfaces thereon,

a second terminal plate received in the first chamber portion in spaced relation to the first terminal plate, the second plate having electrical contacting surfaces thereon,

an electrical resistor in the form of an element having spaced contact surfaces received in the first chamber portion between the first and second terminal plates with the contact surfaces of the plates in electrical engagement with the respective contact surfaces of the resistor element,

a motor protector having a housing, the motor protector mounted in the second chamber portion with the housing spaced a selected distance from the first terminal plate,

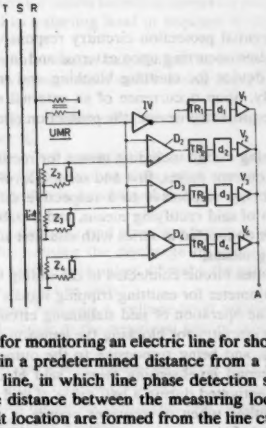
electrical energizing means mounted in the housing, and

lid means lockingly received at the open end of the housing to close the chamber.

4,237,511
SELECTIVE PROTECTION PROCESS FOR ELECTRICAL LINES AND DEVICE FOR CARRYING OUT THE PROCESS

Ivan De Mesmaeker, Fislisbach, Switzerland, and Ivan De Mesmaeker, Fislisbach, Switzerland, assignors to BBC Brown, Boveri & Co Ltd, Baden, Switzerland and BBC Brown, Boveri & Co Ltd, Baden, Switzerland

Filed Oct. 23, 1978, Ser. No. 953,788
Claims priority, application Switzerland, Oct. 31, 1977, 13196/77
Int. Cl.³ H02H 7/26, 7/26
U.S. Cl. 361—80 8 Claims



1. A method for monitoring an electric line for short-circuits occurring within a predetermined distance from a measuring location at the line, in which line phase detection signals dependent on the distance between the measuring location and the short-circuit location are formed from the line current and the line voltage at the measuring location, and in which timewise immediately successive ones of said detection signals are subjected to a detection and comparison of their relative phase angles with a threshold value of at least approximately 180° to produce a triggering signal in the event of a short-circuit occurring within said predetermined distance, comprising the steps of:

(a) forming at least three reference signals proportional to the voltage drop across a reference impedance each caused by a line current signal applied to the respective reference impedance, said at least three reference signals defining a polygonal trigger region;

(b) forming from each of said reference signals a detection signal by forming the difference between a corresponding reference signal and a line voltage signal;

(c) deriving first and second monitoring signals from the zero cross-overs of said detection signals, said first and

second monitoring signals having positive and negative rates of change; and

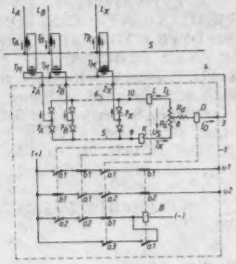
(d) sequence detecting said monitoring signals to produce said triggering signal, said triggering signal being derived from at least twice alternatingly successive first and second monitoring signals within a predetermined monitoring interval of at least approximately the duration of a half-period of the frequency of said detection signal.

4,237,512

DIFFERENTIAL PROTECTION CIRCUITRY FOR ELECTRICAL DEVICES

Thorleif Forford, Vasteras, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Nov. 7, 1978, Ser. No. 958,481
Claims priority, application Sweden, Nov. 11, 1977, 7712755
Int. Cl.³ H02H *3/32*
U.S. Cl. 361—87 **11 Claims**



1. Differential protection circuitry responsive to measured current pulses occurring upon external and internal faults of a protected device for emitting blocking and tripping signals, respectively, upon occurrence of an external and an internal fault of the protected device, the protection circuitry comprising:

a stabilizing circuit including means for rectifying said measured current pulses, first and second level-sensing means each being responsive to a respective different polarity output of said rectifying means, and a stabilizing potentiometer connected in series with said first and second level sensing means;

a differential circuit connected to the sliding terminal of said potentiometer for emitting tripping signals in conjunction with the operation of said stabilizing circuit; and

blocking circuitry for blocking the emission of said tripping signals, and being responsive to the outputs of said first and second level-sensing means, said blocking circuitry being activated during a half cycle of said measured current pulses when overcurrent occurs in said stabilizing circuit before overcurrent occurs in said differential circuit and being reset when the currents through said two level-sensing means are below a predetermined level.

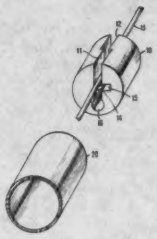
4,237,513

THERMOCONSTRICTIVE DISCONNECT OF CONDUCTORS IN ELECTRICAL APPARATUS

Stephen Foldes, 5 Riverside Dr., Binghamton, N.Y. 13905

Filed Oct. 25, 1978, Ser. No. 954,369
Int. Cl.³ H02H *5/04*
U.S. Cl. 361—103 **2 Claims**

1. Overheating protection for electrical apparatus having internal wirings, including a conductor carrying current vital to the operation of said apparatus, disconnect means comprising a shearing member, having cutting jaws engaging said conductor and a covering of thermoconstrictive material surrounding said shearing member, said material having a coefficient of constriction at a selected temperature sufficient to produce a force for closing said jaws and thereby severing said conductor.

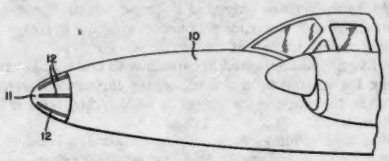


4,237,514

LIGHTNING DIVERTER STRIP

Jay D. Cline, Fort Lauderdale, Fla., assignor to Dayton-Granger, Inc., Fort Lauderdale, Fla.

Continuation of Ser. No. 823,025, Aug. 9, 1977, abandoned. This application Dec. 1, 1978, Ser. No. 965,605
Int. Cl.³ H02H *3/22*
U.S. Cl. 361—117 **5 Claims**



1. A lightning diverter strip for conducting lightning-induced electrical currents and thereby protecting vulnerable aircraft components such as radomes and the like, comprising a substrate of flexible dielectric tape having a lower surface adapted to be applied to the aircraft component to be protected thereby, and having an upper surface, a flexible epoxy binder on said upper surface, a conductive metal powder of finely divided aluminum uniformly deposited along said tape and bound thereto by said binder, said powder having a density such as to provide a very high DC resistance which reads essentially as an open circuit to DC voltages while forming a discrete, non-destructive conductive path for electrical currents induced by lightning.

4,237,515

PROTECTIVE ELECTRICAL DISCHARGE DEVICE

Thomas V. Pierce, Jr., Monroeville, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Mar. 19, 1979, Ser. No. 21,521
Int. Cl.³ H02H *9/06*
U.S. Cl. 361—127 **7 Claims**

1. A protective electrical discharge device comprising:

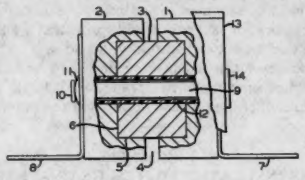
(a) a pair of conductive electrodes, each with a recess formed in one surface and drilled for mounting on a central shaft with recessed surfaces facing each other,

(b) a block of varistor material having a predetermined voltage characteristic for high conductivity and a length longer by a selected distance than the sum of the depth of both recesses in said electrodes,

(1) said varistor block drilled for assembling in line with said electrodes on a central shaft and further sized for

press-fitting into each recess to space said electrodes by an air gap equal to said selected distance,

(c) an insulated shaft and spring structure inserted through said electrodes and varistor as a mounting shaft for retaining the assembly in position with said selected distance air gap, and



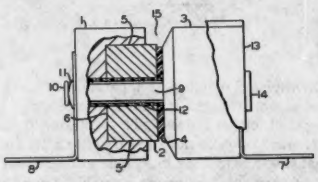
(d) a pair of electric terminals positioned one against each electrode outer surface for forming an electrical discharge path through said electrode and varistor assembly with said air gap in parallel with said varistor block whereby a voltage potential greater than said predetermined characteristic applied across said terminals initially discharges through said varistor block and subsequently discharges through said parallel air gap.

4,237,516

PROTECTIVE ELECTRICAL DISCHARGE DEVICE

Thomas V. Pierce, Jr., Monroeville, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Mar. 19, 1979, Ser. No. 21,522
Int. Cl.³ H02H 9/06
U.S. Cl. 361—127 **10 Claims**



1. A protective electrical discharge device comprising,

(a) a first electrode means bored for mounting on a central shaft and comprising a varistor element fitted into one surface of a metallic block,

(1) said varistor element protruding a preselected distance from and surrounded by that one surface,

(b) a second metallic electrode means also bored for mounting on a central shaft with one surface facing said one surface of said first electrode means with said varistor insert,

(c) a non-conducting washer, bored for mounting on a central shaft, inserted between said one surface of said second electrode means and the protruding varistor portion of said first electrode means for creating a first air gap between said varistor element and second electrode,

(1) said washer and protruding varistor portion creating a second and copositioned air gap between the second electrode one surface and the surface of said metallic block surrounding said varistor protrusion,

(d) a retainer shaft means inserted through the bored elements for holding the assembly of said first and second electrode means and said washer firmly in position, and

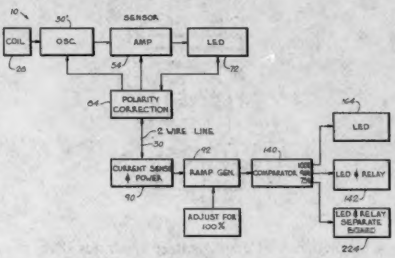
(e) a pair of terminals, one connected to the outer surface of said first and second electrode means by said retainer shaft means for completing a discharge path, over which a high voltage applied to said terminals is dissipated by an initial discharge across said first air gap which actuates a subsequent discharge across said second air gap to dissipate the major portion of the high energy surge and protect the varistor from damage.

4,237,517

MOTION MONITORING APPARATUS

Donald M. Myers, Berrien Springs, Mich., assignor to Ludlow Industries, Inc., Batavia, Ill.

Filed Apr. 28, 1978, Ser. No. 900,889
Int. Cl.³ G01D 3/48
U.S. Cl. 361—239 **4 Claims**



1. A device for monitoring the motion of a movable element, comprising

sensor means for producing a series of repetitive pulses in response to the motion of the movable element and at a repetition rate corresponding of the speed thereof,

ramp generator means for producing an increasing ramp signal,

said ramp generator means including means for resetting said ramp signal to a starting level in response to each of said pulses,

said ramp generator means including an operational current amplifier having an output and inverting and noninverting inputs,

a timing capacitor connected between said output and said inverting input,

adjustable means for supplying current at a controlled adjustable rate to and noninverting input and thereby causing said capacitor to be charged at a corresponding controlled rate,

and means for supplying said repetitive pulses to said inverting input for causing the discharge of said capacitor in response to each of said pulses whereby the ramp signal at said output is reset to zero,

said ramp signal rising to a voltage level which increases with any decrease in the repetition rate of said repetitive pulses,

reference voltage source means including first means for producing a first reference voltage,

first comparator means for comparing said ramp signal with said first reference voltage,

said first comparator means having first output means operable when said ramp signal rises above said first reference voltage,

said reference voltage source means including second means for producing a second reference voltage which is greater than said first reference voltage by a particular percentage,

second comparator means for comparing said ramp signal with said second reference voltage,

and second output means for performing an output function when said ramp signal rises above said second reference voltage,

said adjustable means being operable with the aid of said first output means to calibrate the relationship between said ramp signal and said first reference voltage at a particular operating speed of said movable member whereby said second output means will be operative at a particular

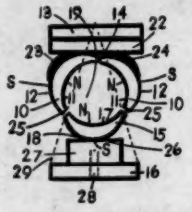
percentage reduction in the speed of said movable element below said operating speed.

4,237,518

NONELECTRIC MAGNETIZER AND DEMAGNETIZER

Lester S. Krulwich, 241 Central Park West, New York, N.Y. 10024

Filed May 11, 1979, Ser. No. 38,250
Int. Cl.³ H01F 13/00
U.S. Cl. 361—267 **7 Claims**



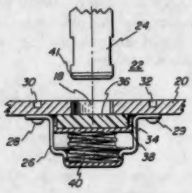
1. A magnetizer and demagnetizer apparatus that operates without electricity comprising a plurality of permanent magnets adjustably mounted on two backings detachable from each other and capable of being manually brought to each other with said magnets aligned so that when the two backings are brought partly together, thereby engaging the magnets, each of said magnets angularly and repellingly face each other with the same magnetic polarity, with said magnets substantially surrounding and adjustably forming an air gap containing a combined magnetic field into and through which workpieces of various sizes and shapes may be inserted and withdrawn to be magnetized.

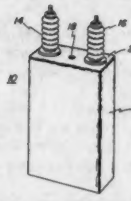
4,237,519

CAPACITOR WITH A CASE SEAL

Samuel R. Wilson, Glens Falls, N.Y., assignor to General Electric Company, Hudson Falls, N.Y.

Filed Aug. 10, 1979, Ser. No. 65,696
Int. Cl.³ H01G 4/04
U.S. Cl. 361—327 **4 Claims**





1. In a power capacitor having a casing, a capacitor roll section in said casing, and a cover for said case, said cover having a notched opening therein for filling said capacitor with dielectric fluid, the improvement comprising a sealing means for said opening, said sealing means being comprised of

(a) a seat for said means formed on the inside of said cover and surrounding said opening,

(b) a resilient gasket shaped to seal said opening,

(c) a biasing spring for urging said gasket into sealing relationship with said seat, and

(d) a housing mounted to the inside of said cover to form an enclosure for said gasket and spring and a guide for aligning said gasket and spring with said seat,

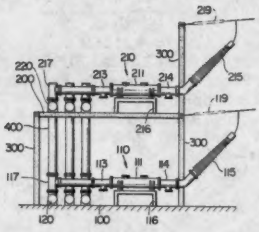
(e) and key means adapted to fit in and be retained in said notched opening to overcome said biasing spring and to hold said sealing means in unpoled relationship.

4,237,520

GAS INSULATED SWITCH-GEAR APPARATUS

Kazuaki Oishi, Hitachi; Seizo Nakano, Mito, and Yutaka Kitano, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 4, 1979, Ser. No. 966
Claims priority, application Japan, Jan. 6, 1978, 53-14278
Int. Cl.³ H02B 1/04
U.S. Cl. 361—335 **8 Claims**



1. A gas insulated switch-gear apparatus comprising a plurality of base planes arranged in parallel to each other at different vertical spatial levels, at least one gas insulated main busbar device arranged on each one of said base planes and having a substantial length extending in a predetermined first direction, at least one electrical equipment assembly having a gas insulated circuit breaker and at least one gas insulated disconnecting switch arranged on each one of said base planes in a second direction substantially perpendicular to said first direction and disposed separately from said main busbar device via a predetermined distance on one side of said main busbar device, at least one feeding busbar device arranged on each one of said base planes and having a substantial length extending in said second direction and connecting said electrical equipment assembly to said main busbar device, and at least one gas insulated connecting busbar device interconnecting said main busbar devices arranged on adjacent ones of said base planes.

4,237,521

HOUSING FOR ELECTRONIC ASSEMBLY INCLUDING INTERNALLY MOUNTED HEAT SINK

Jerry B. Denker, Cincinnati, Ohio, assignor to R. L. Drake Company, Miamisburg, Ohio

Filed Feb. 5, 1979, Ser. No. 9,665
Int. Cl.³ H05K 7/20
U.S. Cl. 361—384 **5 Claims**

1. An electronic device including a heat generating element comprising

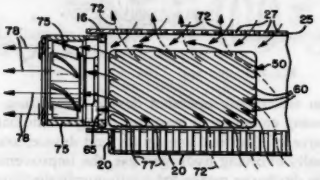
a low profile enclosure including a top cover, a bottom plate and front, rear and side walls,

a heat sink contained entirely within said enclosure and including a body member having attached in thermal relation thereto the heat generating element and a plurality of fins extending laterally outwardly therefrom, said

fins forming spaces therebetween through which cooling air may pass, said fins being set at an acute angle with respect to the vertical,

means forming openings in said bottom plate so positioned with respect to the fins of said heat sink that ambient air may be drawn in through the openings in the bottom plate and pass over said fins,

means forming openings in said top cover and positioned directly above said heat sink,



means forming an opening in the rear or side wall of said enclosure, and means for mounting a fan to draw air through said opening

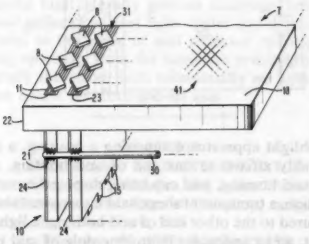
whereby said heat sink may be cooled either by convection with the air passing over the fins and exiting through the openings in the top cover, or by causing the air to be drawn outwardly through the opening in the rear or side wall by means of the fan.

4,237,522

CHIP PACKAGE WITH HIGH CAPACITANCE, STACKED VLSI/POWER SHEETS EXTENDING THROUGH SLOTS IN SUBSTRATE

David A. Thompson, South Salem, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,660
Int. Cl.³ H05K *7/08*
U.S. Cl. 361—392 **7 Claims**



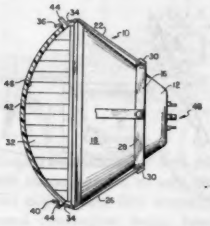
1. In a packaging module for circuit chips including a planar substrate having opposed surfaces, a plurality of stacked power distribution conductive layers, a plurality of land areas on a level adjacent to that of one surface of said substrate for mounting the interconnection to said chips, said stacked power distribution layers being composed of a plurality of parallel, flat conductive metallic sheets having large parallel surfaces with dielectric material between said sheets and with high electrical capacitance between said metal sheets and minimal inductive coupling therebetween, the improvement comprising at least one slot through said substrate between said opposed surfaces, with said slot containing a stack of said metal sheets extending therethrough with their flat surfaces extending through said slot and with at least some of said sheets insulated electrically from said substrate.

4,237,523

REMOVABLE FOG LIGHT FILTERS

Bruce Moote, 11 Madison Ave., Hamilton, Ontario, Canada (L8L 5Y2)

Continuation of Ser. No. 818,740, Jul. 25, 1977, abandoned. This application Apr. 23, 1979, Ser. No. 32,606
Int. Cl.³ F21V *9/02*; B60Q *1/00*
U.S. Cl. 362—2 **5 Claims**



1. A removable fog light filter for automobile headlights or the like, having a front lens portion and a rear neck portion and terminals, wherein said neck portion has a truncated conical shape and wherein said terminals are disposed at the apex of said conical shape, comprising in combination: a retaining member including a C-shaped yoke portion, said yoke portion having an open mouth portion between the ends of said C-shaped yoke portion, said yoke portion configured for only partially circumscribing a portion of said truncated conical shape of said rear neck portion of said automobile headlight, said yoke portion being a V-shaped rigid member disposed having the apex of said V-shaped member extending substantially parallel to a conically shaped surface of said truncated conical shape of said rear neck portion of said automobile headlight when said C-shaped yoke portion is positioned intermediate said front lens portion and said apex of said conical shape, a resilient member, said resilient member being disposed intermediate and clampingly engaging said conically shaped surface and said V-shaped member when said C-shaped yoke portion is positioned intermediate said front lens and said apex of said conical shape, at least three substantially equally spaced radially extending arms emanating from said yoke portion and extending in a forwardly direction towards and beyond the front lens portion of said headlight when said yoke portion is disposed touching said portion of said rear neck portion, each said redially extending arm being provided with an aperture and curved in an inwardly direction towards the center of said lens portion at its distal ends; and a transluscent light filter being of a size and shaped to substantially cover the lens portion of said automobile headlight and having at least three protrusions equally disposed proximate the circumference thereof adapted to be received by said radial arm aperture and being removably retained thereon for retaining said filter against said headlight front lens portion, wherein said filter and said resilient member engage said headlight in clamping engagement when said at least three protrusions are engaged within said radial arm aperture and wherein said yoke portion may be disposed disengaged from said headlight when said at least three protrusions are disengaged from said radial arm aperture by displacing the remaining portion of said headlight through said open mouth portion, said light filter filtering said light provided by said headlight and converting it to a fog penetrating beam.

4,237,524

PRESSURE-MEDIUM-ACTUATED INSTALLATION FOR ADJUSTING THE INCLINATION OF A VEHICLE HEADLIGHT

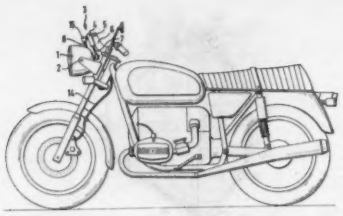
Peter Hundemer, Hackensack, N.J., assignor to Bayerische Motoren Werke Atiengesellschaft, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,474

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806306

Int. Cl.³ B60Q 1/10

U.S. Cl. 362—71 10 Claims



1. An installation actuated by a fluid pressure medium for adjusting the inclination of a vehicle headlight in relation to the road plane, comprising adjusting cylinder means, on the one hand, arranged at a relatively fixed part of the vehicle and, on the other, operatively connected with the headlight, said adjusting cylinder means being operable to pivot the headlight about a cross axis during actuation of said adjusting cylinder means by the fluid pressure medium, characterized in that the adjusting cylinder means is operatively connected with a hydraulic brake system of the vehicle such that hydraulic fluid of said hydraulic brake system actuates said adjusting cylinder means to pivot the headlight about said cross axis.

4,237,525

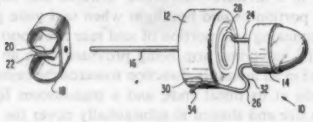
ILLUMINATED JEWELRY

Arthur R. Deter, P.O. Box 1864, Anderson, S.C. 29621

Continuation of Ser. No. 815,438, Jul. 13, 1977, abandoned. This application Aug. 11, 1978, Ser. No. 932,932

Int. Cl.³ F21L 15/08

U.S. Cl. 362—104 7 Claims



1. Illuminated jewelry comprising:

(a) a battery having a positive terminal and a negative terminal;

(b) a light emissive diode mounted on said battery and having a first lead mounted on and electrically connected to one said terminal of said battery so as to provide support for said light emissive diode and a second lead resiliently biased against the other said terminal of said battery, said second lead making interruptible contact with said other terminal; and

(c) attachment means mounted on said battery for attaching said illuminated jewelry including said light emissive diode and said battery to a wearer.

4,237,526

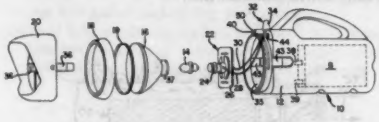
BATTERY OPERATED DEVICE HAVING A WATERPROOF HOUSING AND GAS DISCHARGE VENT

David H. Wood, Avon Lake, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed May 19, 1978, Ser. No. 907,852

Int. Cl.³ F21L 7/00

U.S. Cl. 362—158 16 Claims



1. In an electrically operated device comprising a waterproof housing enclosing at least one dry galvanic battery cell as the source of electrical energy for said device, said battery cell normally evolving hydrogen gas, the improvement comprising gas discharge means for continuously discharging said evolved hydrogen gas from the interior of said device including at least one aperture of predetermined size disposed in said housing in fluid communication with said interior and the atmosphere exterior to said device and a hydrophobic membrane, said membrane covering each aperture and secured watertightly thereabout and being of a predetermined composition and microporosity such that the concentration of hydrogen gas within the air space in said housing interior is maintained below about 10% by volume.

4,237,527

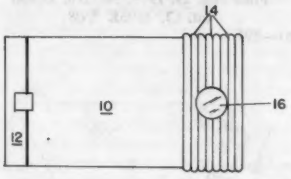
FLASHLIGHT APPARATUS

Leon J. Breedlove, 453 Nassau Dr., Baton Rouge, La. 70815

Filed Oct. 16, 1978, Ser. No. 951,584

Int. Cl.² F21L 7/00

U.S. Cl. 362—189 7 Claims



1. A flashlight apparatus comprising a housing, a cap, said cap removably affixed to one end of said housing, a mouth portion of said housing, said cap being disposed covering said mouth portion, a transparent sheet, said transparent sheet being fixedly secured to the other end of said housing, a light reflecting element, an incandescent lamp, one pole of said incandescent lamp engaging said light reflecting element, said incandescent lamp and said light reflecting element being disposed within said housing adjacent said transparent sheet, a contacting strap, a battery, said contacting strap and said battery being disposed passing through said mouth portion and residing entirely within said housing, a plurality of annular corrugations disposed in the exterior surface of said housing adjacent said other end thereof, said plurality of corrugations for urging said transparent sheet towards said one end of said housing, one end of said contacting strap being disposed electrically contacting one pole of said battery, the other pole of said incandescent lamp being disposed contacting the other pole of said battery, means to electrically connect the other end of said contacting strap to said one pole of said incandescent lamp said electrically connecting means including a circular depression located within said plurality of corrugations, said depression disposed

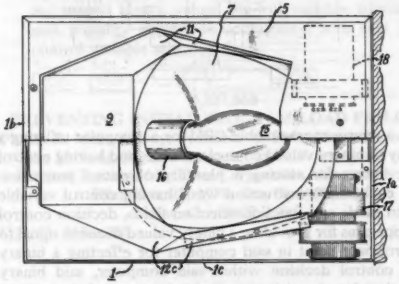
adjacent to said other end of said contacting strap, said other end of said contacting strap being disposed radially inwardly of said housing upon the applicaion of manually radially inwardly directed forces upon said depression, said other end of said contacting strap forming a part of a series circuit including the poles of said battery and the poles of said incandescent lamp and said one end of said contacting strap, wherein said cap and said housing and said transparent sheet comprise a waterproof enclosure, said series circuit entirely residing within said enclosure.

4,237,528

LUMINAIRE

Samuel L. Baldwin, East Flat Rock, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 23, 1977, Ser. No. 854,174
Int. Cl.[2] F23Q *3/00*
U.S. Cl. 362—263 **8 Claims**



1. A luminaire adapted to be mounted eccentric to a work area below a ceiling or the like for indirectly lighting the work area comprising, in combination, a housing having side, front and rear walls defining an open top, said housing having a horizontal fore-and-aft axis intersecting said front and rear walls, a bowl-shaped reflector having a light center therein and a rim defining an opening, said reflector mounted within said housing with its opening facing the open top of said housing and being tilted toward the front of said housing so that the plane of said opening is at an angle to said fore-and-aft axis, and an elongated high intensity gaseous discharge lamp mounted within said reflector at said light center and extending generally parallel to the plane of said reflector opening, the light emanating upwardly from the luminaire principally forwardly and laterally therefrom with substantially no light emanating therefrom below said fore-and-aft axis.

4,237,529

HEADLAMP ADJUSTING DEVICE

Erich Mutschler; Hans Prohaska, and Adam Weber, all of Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,559
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803089
Int. Cl.[3] F21V *21/26*
U.S. Cl. 362—272 **9 Claims**

1. Apparatus for adjusting the inclination of a motor vehicle headlamp comprising:

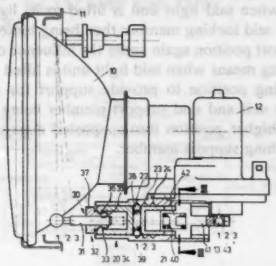
a motor;

An actuating member coupled to said motor, said motor being operable to selectively place said actuating member in selected ones of a first plurality of predetermined positions;

a movable push rod coupled to said headlamp;

means for exerting a locking force on said push rod in selected ones of a plurality of second predetermined positions, each of said plurality of second predetermined positions having a correspondence with one of said first plurality of predetermined positions of said actuating member;

an articulated connection between said push rod and said actuating member, said articulated connection comprising



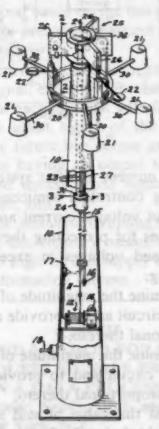
first connection means carried by said push rod and second connection means carried by said actuating member and adapted to engage said first connection means, said first and second connection means having a predetermined clearance therebetween.

4,237,530

HIGH MAST LIGHT SUPPORT SYSTEM

Joseph E. Murray, Walbridge, and Aloysius M. Mocek, Jr., Toledo, both of Ohio, assignors to Rowe Industries Inc., Division of Groman Corporation, Toledo, Ohio

Filed Dec. 12, 1977, Ser. No. 859,696
Int. Cl.[3] H05K *7/10*
U.S. Cl. 362—418 **19 Claims**



1. A lighting assembly comprising in combination a high mast and an annular light carrying unit in which the light carrying unit can be raised and lowered by lift means operable from the lower region of the mast, locking means for locking said light unit in an upper lighting position on said mast comprising a plurality of like single pivotal locking members on said light unit and matching support members having no moving parts aligned on said mast for engagement with said locking members,

said locking members each being pivotable to a support position in which it will engage its matching support member when said light unit is raised to its lighting position,

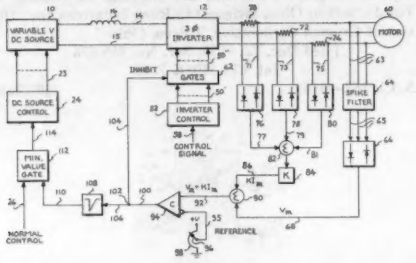
each said locking member having associated biasing means imparting a normal support position orientation to said locking member, each said locking member being located for movement against the force of its associated biasing means upon engagement with its matching support member when said light unit is lifted to its lighting position, each said locking member then being biased to its normal support position again under the influence of its respective biasing means when said light unit is lifted higher than its lighting position to provide support for said light unit upon unit and said support member being lowered from said higher position into supported engagement with its matching support member.

4,237,531

CONTROLLED CURRENT INVERTER SYSTEM HAVING SEMICONDUCTOR OVERVOLTAGE PROTECTION

John H. Cutler, Roanoke, and Loren H. Walker, Salem, both of Va., assignors to General Electric Company, Salem, Va.

Filed Apr. 24, 1979, Ser. No. 32,770
Int. Cl.[3] H02H 7/122; H02P 5/40
U.S. Cl. 363—58 **11 Claims**



1. In a controlled current inverter system including an inverter circuit having controlled semiconductor devices for controlling the output voltage, current and frequency of the inverter circuit, means for protecting the semiconductor devices against impressed voltages in excess of a prescribed magnitude comprising:

(a) means to determine the magnitude of the output voltage of said inverter circuit and to provide a first signal having a value proportional thereto;

(b) means to determine the magnitude of the output current of said inverter circuit and to provide a second signal having a value proportional thereto;

(c) means to adjust the value of said second signal by a constant to provide third signal of adjusted magnitude, said constant having a value determined as a function of the impedance values of a load supplied by said inverter circuit;

(d) means to combine said first and third signals to provide a limit signal;

(e) means to provide a reference signal proportional to a permissible voltage which may be impressed across each of said semiconductor devices;

(f) means to compare said limit signal and said reference signal and to output a correction signal in response to a prescribed relationship therebetween; and,

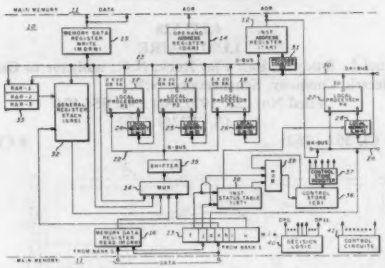
(g) means responsive to said correction signal to effect a reduction in the output voltage and current of said inverter circuit.

4,237,532

TABLE DRIVEN DECISION AND CONTROL LOGIC FOR DIGITAL COMPUTERS

Barry R. Borgerson, Gwynedd Valley; Garold S. Tjaden, Doylestown, both of Pa., and Merlin L. Hanson, Arden Hills, Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 2, 1977, Ser. No. 830,302
Int. Cl.[3] G06F 9/22, 13/00, 9/42
U.S. Cl. 364—200 **10 Claims**



1. In a microprogrammable CPU for a computer utilizing a plurality of binary valued control variables and having control storage means for storing a plurality of micro instruction words, each micro instruction word having control variable selection fields and function selection fields, decision control logic apparatus for providing a binary valued decision signal to an appropriate point in said computer for effecting a binary valued control decision within said computer, said binary valued decision signal being provided in accordance with a binary valued control function utilized in said computer for making said binary valued control decision, said control function being a function of binary valued control variables selected from said plurality thereof by said control variable selection fields, said control function selected from a plurality of control functions by said function selection fields, said decision control logic apparatus comprising

control variable means for providing a plurality of binary valued control variable signals corresponding to said plurality of binary valued control variables, respectively,

control variable selection means coupled to receive said plurality of binary valued control variable signals and said control variable selection fields for selecting control variable signals from said plurality thereof in accordance with said control variable selection fields, and

memory means coupled to receive said selected control variable signals and said function selection fields, said memory means storing a plurality of truth tables corresponding to said plurality of control functions respectively, each said truth table comprising binary valued entries, each said entry equal to the binary value of the associated control function for a particular combination of binary values of said selected control variable signals, said memory means being addressed by said selected control variable signals and said function selection fields for providing, in response thereto, the truth table entry corresponding to said selected control variable signals from the truth table selected in accordance with said function selection fields, the addressed truth table entry providing said binary valued decision signal to said appropriate point in said computer for effecting said binary valued control decision within said computer,

and in which said computer operates in cycles, said plurality of binary valued control variables comprise a plurality of first binary valued control variables and a plurality of second binary valued control variables, said second binary valued control variables being available in a cycle subsequent to the availability of said first binary valued control variables, said control variable means comprises means for

providing a plurality of first binary valued control variable signals and a plurality of second binary valued control variable signals corresponding to said plurality of first binary valued control variables and said plurality of second binary valued control variables respectively, and said control variable selection fields comprise first control variable selection fields and second control variable selection fields, said control variable selection means comprising

first control variable selection means responsive to said plurality of first binary valued control variable signals and said first control variable selection fields for selecting first binary valued control variable signals from said plurality thereof in accordance with said first control variable selection fields, and

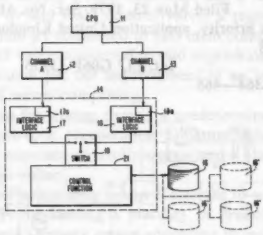
second control variable selection means responsive to said plurality of second binary valued control variable signals and said second control variable selection fields for selecting second binary valued control variable signals from said plurality thereof in accordance with said second control variable selection fields.

4,237,533

PREVENTING INITIAL PROGRAM LOAD FAILURES

Phillip R. Mills, Gilroy; Fernando A. Luiz, Monte Sereno, and John H. Sorg, Jr., Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1978, Ser. No. 973,992
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **6 Claims**



1. In a computer system in which a central processing unit communicates over channel devices through commands to a control device controlling direct access storage devices, said control device terminating two or more channel devices from the same or different central processing units, said central processing unit initiating an "initial program load" procedure under which a "system reset" signal is sent to said control device by each channel device connected to the central processing unit and connectable to said control device, followed by the issuance of a "read initial program load" command by one of said channel devices to said control device, said control device being capable of responding to only one of said channel devices at any one time and, when said control device is responding to one channel device, presenting a "control device busy" signal to all other channel devices,

apparatus including;

means responsive to the initiation of a "system reset" procedure for generating a first signal,

means responsive to a "not busy" condition of said control device for generating a second signal,

means responsive to the joint existence of said first and said second signals for generating a "system reset pending" signal, and

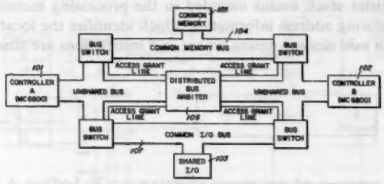
means responsive to said "system reset pending" signal for inhibiting the transmission of said "control device busy" signal to said channels.

4,237,534

BUS ARBITER

Kenneth A. Felix, Crystal Lake, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 13, 1978, Ser. No. 960,321
Int. Cl.³ G06F *9/46, 13/00*
U.S. Cl. 364—200 **5 Claims**



1. A bus arbiter for providing, in response to bus access request signals from two or more controllers, dynamically prioritized access to a common bus of a digital system have at least one peripheral device coupled to the common bus, and said two or more controllers coupled to the common bus through respective bus access switching means, said switching means activated by applied present bus access grant signals, the arbiter comprising:

(a) a plurality of logic circuits each having input means coupled to a plurality of decoding AND gates inputs and the outputs of the AND gates are coupled to an OR gate, for generating at the output of the OR gate a future bus access grant signal based on the bus access request signals and one or more present bus access grant signals applied to said input means;

(b) a plurality of memory devices for storing the present bus access grant signal, each of said memory devices coupled to the output of each said OR gate for updating the present bus access grant signal of the memory devices in response to the future bus access grant signal, and each memory device having an output terminal for applying the present bus access grant signal to the bus access switching means; and

(c) direct feedback means for coupling the output terminal of at least one of the memory means to the input memory devices of each logic circuit supply the present bus access grant signal information thereto .

4,237,535

APPARATUS AND METHOD FOR RECEIVING AND SERVICING REQUEST SIGNALS FROM PERIPHERAL DEVICES IN A DATA PROCESSING SYSTEM

Gregory B. Wiedenman, Sandy, Utah, assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 11, 1979, Ser. No. 29,157
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **4 Claims**

1. Apparatus including processing means for servicing requests from a plurality of peripheral devices in which each peripheral device includes a request line over which request signals are sent by the device when service is requested, each device being responsive to a device address signal which identifies the device and an enable vector signal for producing a vector request signal which identifies the service requested by the device, said apparatus including

priority logic means coupled to said request lines and responsive to said vector request signals received over one or more of the request lines for producing a device address

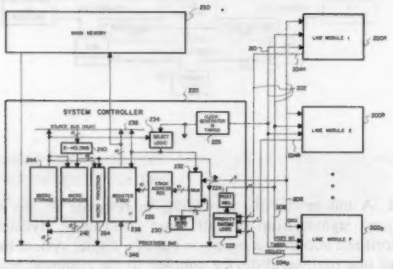
signal which identifies the peripheral device of those requesting service which has the highest priority,

means for periodically producing enable vector signals,

means for supplying said produced device address signal and enable vector signal to said highest priority peripheral device,

storage means for storing instructions which define the operations suitable for servicing requests from the peripheral devices,

register stack means included in the processing means for storing address information which identifies the locations in said storage means where said instructions are stored,



means responsive to each vector request signal for producing index signals which identify the locations in said register stack means containing the address information which identifies the locations in said storage means where the instructions for servicing the request of the request vector are stored, and

means for supplying the index signals to the register stack means included within the processing means for reading out a said instruction for performing the operation so as to service the request from the identified peripheral device.

4,237,536

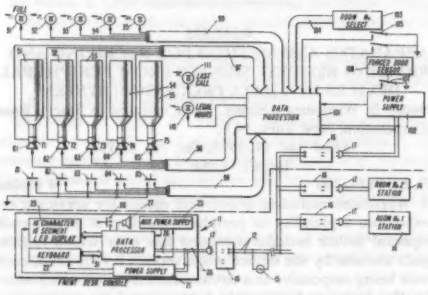
SYSTEM FOR INDICATING AND CONTROLLING DISPENSING OF BEVERAGES

Michael R. Enelow, Miami Lakes; Michael Levy, Plantation, and William P. Porter, Coral Springs, all of Fla., assignors to M.R.E. Enterprises, Inc., Miami Lakes, Fla.

Filed Oct. 12, 1978, Ser. No. 950,810

Int. Cl.[3] G06F *15/20*; B67D *5/06*

U.S. Cl. 364—465 **21 Claims**



1. A system for indicating and controlling at a central console the dispensing of beverages from a plurality of units remote from the console, each of the units including a plurality of beverage reservoirs, comprising:

a plurality of beverage flow controllers at each unit, one of said flow controllers being provided for each reservoir;

the console including: a keyboard for deriving data and command signals, data processing means responsive to the keyboard data and command signals for deriving addressing signals for the units;

each of said units including: customer input signalling means, data processing means for: selectively deriving control signals for the flow of a beverage from the reservoirs and for deriving signals indicative of the quantity of beverage dispensed from the selected reservoirs, and for coupling the quantity of beverage signals to the console data processing means in response to the address of the unit being transmitted to the unit data processor from the console data processor, and means for activating the flow control means in response to the beverage flow control signals;

the console further comprising: display means responsive to the console data processing means for displaying characters derived in response to the keyboard data signals and the quantity of beverage signals derived from the address units.

4,237,537

PRICE DISPLAY SETTING ARRANGEMENTS

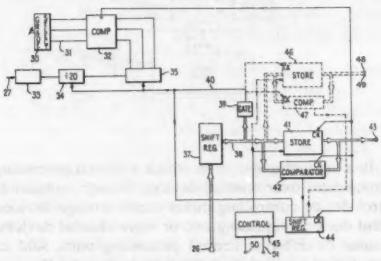
Brian E. Pitches; Robert M. S. Murray, and Ian A. Greig, all of Edinburgh, Scotland, assignors to Ferranti Limited, Hollinwood, England

Filed May 23, 1979, Ser. No. 41,616

Claims priority, application United Kingdom, May 23, 1978, 21527/78

Int. Cl.[3] G06F *15/56*

U.S. Cl. 364—465 **14 Claims**



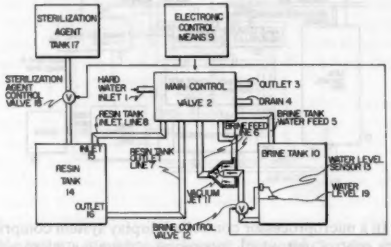
2. A price setting arrangement for remotely controlled dispensing apparatus from which any one of a number of products may be selected, comprising a transmitting unit located separately from the remotely controlled apparatus including manually settable switching means operable to produce for each unit price a unique binary word of fixed length, and scanning means operable to address the switching means and to select each binary word in turn and to transmit the binary words in a sequence which includes all of the unit prices, and a receiving unit carried by the remotely controlled apparatus including recognition means responsive to the selection of a particular product to recognise the unit price signal transmitted in respect of that product, comparison means operable to compare the recognised received price signal in each transmission with a signal stored from a previous transmission, and means responsive to a predetermined successive number of comparisons made without identity between the received price signal and the stored signal to replace the stored signal by the received price signal.

4,237,538

ELECTRONIC MEANS FOR CONTROLLING THE REGENERATION OF RESINS IN A RESIN TYPE ION EXCHANGE DEVICE

Guy Le Dall, Rueil-Malmaison, France, assignor to Permo S.A., Rueil-Malmaison, France

Filed Nov. 24, 1978, Ser. No. 963,261
Int. Cl.[3] G06F 15/46; B01D 15/04; C02F 1/42
U.S. Cl. 364—500 20 Claims



1. In a resin-type ion exchange apparatus of the type requiring periodic resin regeneration and having an electrically actuated main control valve including an inlet, an outlet and a drain, a resin tank having a resin tank inlet and a resin tank outlet connected to said main control valve, a regeneration brine tank, a vacuum jet connected to said main control valve and a brine control valve connected to said regeneration brine tank and said vacuum jet, the improvement of an improved electronic control means comprising:

a memory means for storing therein a predetermined value loading program, a regeneration initiation program, a regeneration sequence control program and a plurality of predetermined values;

a microprocessor calculating means connected to said memory means (1) for loading a plurality of predetermined values into said memory means according to said predetermined value loading program, (2) for initiating a regeneration sequence according to said regeneration initiation program and at least one of said predetermined values, (3) for controlling said regeneration sequence according to said regeneration sequence program and at least some of said predetermined values by production of valve control signals (a) for causing said main control valve to couple said inlet and to said resin tank outlet and said resin tank outlet to said drain for backwashing said resin, (b) for causing said main control valve to couple said inlet to said vacuum jet, said vacuum jet to said resin tank outlet and said resin tank inlet to said drain and for causing said brine control valve to open for brining said resin, (c) for causing said main control valve to couple said inlet to said resin tank outlet and said resin tank outlet to said drain for rinsing said resin, and (d) for causing said main control valve to couple said inlet to said resin tank inlet and said resin tank outlet to said outlet for ordinary operation;

a programming means connected to said microprocessor calculating means for application of at least some of said predetermined values to said microprocessor calculating means for storing in said memory means; and

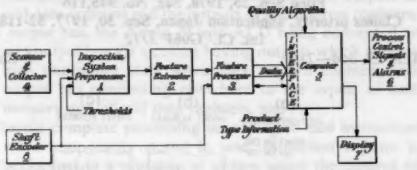
an output buffer means connected to said microprocessor calculating means, said main control valve and said brine control valve for converting said valve control signals into electrical valve operating signals for controlling said main control valve and said brine control valve.

4,237,539

ON-LINE WEB INSPECTION SYSTEM

Michael J. Piovoso, Newark; Edmund H. Smith, Jr., Wilmington, and William E. Wolf, Newark, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 21, 1977, Ser. No. 853,421
Int. Cl.[3] G01N 21/84; G06F 15/20
U.S. Cl. 364—552 7 Claims



1. A method of automatically inspecting, by a sequence of areas of preselected size, a running web for defects using a flying spot scanning system, by repetitively measuring a plurality of web features which may contribute to a web defect, each feature represented by an electrical signal extracted in the course of scanning said web, and analyzing said extracted feature signals with regard to each said area of preselected size comprising of steps of:

converting said plurality of extracted feature signals, obtained from scanning each area, into a set of area characterizing feature values representative of the magnitudes and distribution of said extracted features over each said scanned area;

calibrating each said set of area characterizing feature values to obtain correspondence with a range of stored values specifying one or more sets of reference feature values;

classifying each said set of calibrated area characterizing feature values according to its relationship with said one or more sets of reference feature values; and

grading as to acceptability each defective web area in said inspected sequence of areas based on the outcome of said classification.

4,237,540

TAPE RECORDER WITH TABLE COMPUTER

Masaaki Sato, Hatchioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Feb. 27, 1979, Ser. No. 15,642
Claims priority, application Japan, Mar. 1, 1978, 53-23295
Int. Cl.[3] G11B 1/04; G06F 15/02
U.S. Cl. 364—705 4 Claims

1. A combination tape recorder/calculator in a polyhedron shape having a cassette charging portion of the tape recorder on one side surface of the polyhedron and digit keys for performing standard calculator functions on another side surface of the polyhedron, said combination comprising a rotatable display portion wherein said display portion indicates a count representative of tape movement when said display portion is switched into a first mode by rotating said display portion until it is aligned with said one side surface and said display portion indicates keyboard entries and calculated results when said

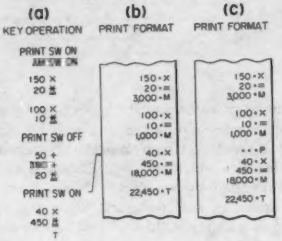
display portion is switched into a second mode by rotating said display portion until it is aligned with said another side surface.

4,237,541

ELECTRONIC APPARATUS FOR INDICATING THAT A PRINTER HAS BEEN DISABLED

Hiroyuki Mikada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1978, Ser. No. 945,116
Claims priority, application Japan, Sep. 30, 1977, 52-118226
Int. Cl.³ G06F *3/12*
U.S. Cl. 364—710 **3 Claims**



1. In an electronic apparatus having a display, a combination comprising:

printing means;

control means connected to said print means for enabling and disabling the operation of said printing means; and

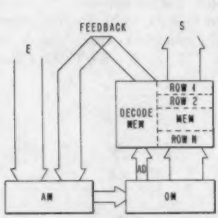
means connected to said control means for providing an indication that said printing means was disabled when said printing means is enabled after having been disabled by said control means.

4,237,542

PROGRAMMABLE LOGIC ARRAYS

Maurice Cukier, Vence, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1978, Ser. No. 901,166
Claims priority, application France, Jun. 30, 1977, 77 20729
Int. Cl.³ G06F *9/00, 7/48*
U.S. Cl. 364—900 **5 Claims**



1. In a programmable logic array of the type which includes an AND matrix of logic performing elements generating inputs to an OR matrix of logic performing elements which in turn feeds output signals generated from said inputs into a storage means on a set of output lines for storing said output signals and for supplying said output signals as inputs to the AND array, the improvement comprising:

said storage means having n separately accessed registers each of which is connected to said set of output lines for receipt of output signals on said set of output lines by each of the registers; and

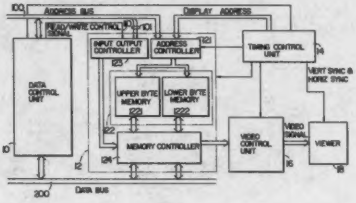
decoding circuit coupled to said storage means for supplying different combinations of said output Signals as inputs to said AND array in different time segments by selecting a different one of said locations in said storage means during each such time segment.

4,237,543

MICROPROCESSOR CONTROLLED DISPLAY SYSTEM

Yoji Nishio; Toshitaka Hara, and Nagaharu Hamada, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 1, 1978, Ser. No. 938,954
Claims priority, application Japan, Sep. 2, 1977, 52-104882
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 **8 Claims**



1. In a microprocessor controlled display system comprising a data control unit which incorporates therein a microprocessor and a microprogram memory for storing a program for operating said microprocessor and carries out data access with an external information source and data access with a refresh memory unit connected thereto via an address bus and a data bus, said refresh memory unit storing a field of data to be displayed through the data access with said data control unit and reading said data for display in synchronism with display timing, a video control unit for converting the data read for display from said refresh memory unit to a video signal, and a viewer for receiving said video signal to display an image thereof; the improvement that said refresh memory unit comprises;

(a) a plurality of byte memories each storing the data by byte,

(b) an address controller for switching display addresses and addresses from said data control unit in a time division manner to enable the access to addresses of said plurality of byte memories,

(c) an I/O controller for receiving a read/write control signal indicating a particular type of access and an access memory specifying signal indicating a particular memory to be accessed, from said data control unit and producing I/O control signals in accordance with the received signals, and

(d) a memory controller responsive to said I/O control signals to cause the data access between said data control unit and said plurality of byte memories to be carried out for each byte memory or for said plurality of byte memories.

4,237,544

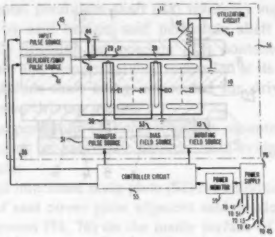
MAGNETIC MEMORY ORGANIZATION

Peter I. Bonyhard, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 15, 1978, Ser. No. 960,948
Int. Cl.³ G11C *11/02, 29/00*
U.S. Cl. 364—900 **8 Claims**

1. A magnetic bubble memory arrangement comprising a layer of magnetic material in which magnetic bubbles can be moved, and means for moving said bubbles in said layer along a plurality of multistage paths including a plurality of storage loops and an accessing path, said accessing path having therein a detector for bubbles stored in said loops and moved to said accessing path during normal operation of said memory, said means for moving including a driver for moving said bubbles when powered by a power supply and means for providing a

power outage signal upon the occurrence of a power outage in said power supply, said arrangement including both a master clock counter and an address register, means responsive to control signals from said counter and said register for generating respectively in said accessing path a bubbles pattern representative of the number of stages MC for which bubble movement has occurred from a reference stage and the address AR of selected data for movement to said detector, said generating means including a bubble generator coupled to said accessing path and responsive to said control signals for generating said



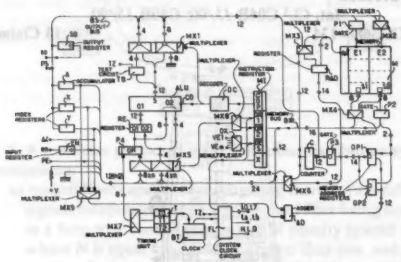
bubble pattern at a point g+f stages from said detector defining thereby a tag of f bits representative of the present status of said master counter and the present address in said address register in response to said power outage signal, means responsive to a power outage signal indicative of the reinstatement of power to said power supply for setting said counter and register to zero and for moving said tag g stages to said detector for setting said counter and register to Mc+g+2f and to AR respectively where g is a constant integer equal to the number of stages between said generator and the detector less the number of stages encompassed by the tag.

4,237,545

PROGRAMMABLE SEQUENTIAL LOGIC

Rene' Deglin, Velizy-Villacoublay, and Gilbert Reymond, Malakoff, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel S.A., Paris, France

Continuation of Ser. No. 780,393, Mar. 23, 1977, abandoned. This application Dec. 27, 1978, Ser. No. 973,774
Claims priority, application France, Mar. 31, 1976, 76 09391
Int. Cl.[3] G06F *9/06*
U.S. Cl. 364—900 **6 Claims**



1. A programmable sequential logic circuit for the processing of data according to a program containing instructions of different lengths each instruction composed of one or several instruction words, said sequential logic circuit comprising:

a memory containing instructions and data words,

an arithmetic and logical processing unit (ALU),

an instruction register for temporarily storing an instruction word from said memory,

a plurality of data registers and address registers,

an adder connected to index the contents of either of said address registers by adding the contents of one of said data registers to either of said address registers,

a clock driving a system clock circuit which is additionly responsive to an operation code in driving said instruction register to control the operation of said sequential logic circuit,

an input multiplexer through which access to said ALU is provided wherein inputs of said input multiplexer are connected to the outputs of said memory, the outputs of said data registers and the outputs of said address registers,

an output bus, the output of said ALU being connected to said output bus via a circuit having outputs which adopt a high impedance state when they are not enabled, said output bus connecting elsewhere to the inputs of said memory and of said data registers, and

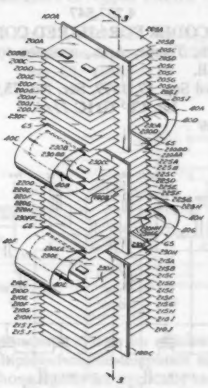
wherein complete processing according to said instruction word temporarily stored in said instruction register is performed in a plurality of phases under the control of said system clock circuit, a first portion of said plurality of phases being devoted to the acquisition of one or several data or instruction words, and a second portion being devoted to the execution of an operation by said ALU according to an operation code contained in said instruction word stored in said instruction register.

4,237,546

MULTI-LAYERED BACK PLANE FOR A COMPUTER SYSTEM

George H. Wells, Santa Ana, Calif., assignor to Technology Marketing, Inc., Costa Mesa, Calif.

Filed Jan. 31, 1979, Ser. No. 7,933
Int. Cl.[3] H01R *23/68*
U.S. Cl. 364—900 **5 Claims**



1. A computer system having a plurality of circuit board components such as processors or memories mounted on a plurality of pairs of back planes, each of said back plane pairs comprising a front back plane having front and back faces, and a rear back plane having front and back faces, the back face of said front back plane facing the front face of said rear back plane, in which:

one of said back plane pairs comprises a processor back plane pair having a first front face and a first back face; and

another of said back plane pairs comprises a memory back plane pair having a second front face and a second back face, said system further comprising:

front and back processor circuit board components mounted on said first front and back faces, respectively, said front processor components insulated from said back processor components;

front and back memory circuit board components

mounted on said second front and back faces, respectively, said front memory components insulated from said back memory components;

first means in one of said processor and memory back plane pairs for providing electrical access on the front face of said one back plane pair to front and back components mounted on the front and back faces, respectively, of said one back plane pair while maintaining the front components of said one back plane pair insulated from its back components;

second means in said one back plane pair for providing electrical access on the back face of said one back plane pair to said front and back components of said one back plane pair and maintaining said front components of said one back plane pair insulated from its back components; and

plural connecting means, some of which are connected between said first means and the front face of the other of said back plane pairs, others of which are connected between said second means and the back face of said other back plane pair, said connecting means for connecting each of said front and back processor components to each of said front and back memory components.

4,237,547

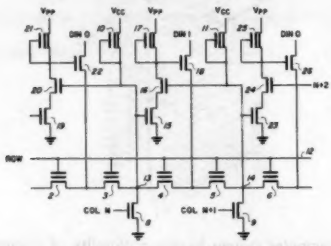
PROGRAM DECODER FOR SHARED CONTACT EPROM

Stephen L. Smith, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 17, 1979, Ser. No. 75,928

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—189 **9 Claims**



1. A decoding circuit for a shared contact electrically programmable read only memory including a plurality of pairs of memory devices arranged in a row, first and second data lines and a plurality of column select lines wherein each pair of memory devices is coupled to a different column select line and wherein first and second devices in each pair are each coupled to a different one of said first and second data lines, comprising:

first means coupled between adjacent column select lines for sensing when one of said adjacent column select lines has been energized; and

switching means coupled to said first means and responsive thereto for enabling the data line associated with said second device in each pair, the data line associated with the first device in each pair being controlled by another one of said decoding circuits.

4,237,548

ELECTRONIC TIMEPIECE

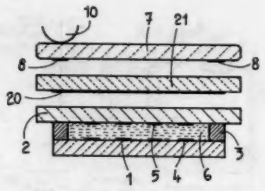
Jean Fellrath, Neuchatel; Jean-Felix Perotto, Hauterive; Ali Schneiter, and Maurice Grimm, both of Neuchatel, all of Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland

Filed Feb. 1, 1979, Ser. No. 8,238

Claims priority, application Switzerland, Feb. 6, 1978, 1271/78

Int. Cl.³ G04C *17/00, 19/00, 9/00*

U.S. Cl. 368—69 **8 Claims**



1. An electronic timepiece having a crystal with an inner face adjacent an electro-optic passive display cell and having several functions, comprising:

oscillator means producing a timebase signal;

electronic circuit means for controlling the several functions of the timepiece operable by means of at least one stationary key, the stationary key having a capacitive action and being carried on the inner face of the crystal, the stationary key being coupled to the timebase signal by a fixed condenser, and

a conductive element interposed between the stationary key and the display cell and constituting one of the two electrodes of the fixed condenser to reduce the influence of a parasitic condenser formed by the plates of the electro-optic passive display cell on the stationary key.

4,237,549

METRONOME

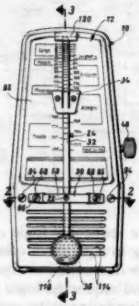
Friedrich Härle, Isny-Neutrauchburg, Fed. Rep. of Germany, assignor to Rudolf Wittner GmbH u. Co., Isny, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 920,124

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1977, 2731210

Int. Cl.³ G04B *15/00*; G10B *15/00*

U.S. Cl. 368—134 **18 Claims**



1. A metronome, comprising

(a) an elongate trough-like casing (10) including three side walls, a bottom wall and a top wall, said walls being arranged to define a chamber;

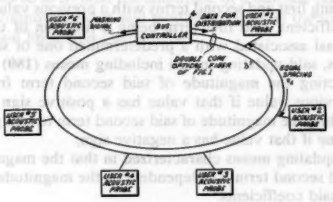
(b) a front cover plate (12) connected with said casing for closing said chamber;
(c) pendulum driving means (16,26) arranged within said chamber;
(d) a horizontal U-shaped pendulum bridge (30) extending transversely across said cover plate adjacent the front surface thereof;
(e) a pair of spaced threaded devices (68) for simultaneously connecting both said bridge and said pendulum driving means in contiguous engagement with the front and rear surfaces of said cover plate, respectively;
(f) a horizontal pendulum shaft (22) rotatably supported at one end by said bridge, said pendulum shaft extending rearwardly through an opening (28) contained in said cover plate and being rotatably supported at its outer end, said pendulum shaft being connected for driven movement by said driving means;
(g) a vertical pendulum (24) non-rotatably mounted intermediate its ends on said shaft between said bridge and said cover plate;
(h) a vertical imprinted scale plate (92) mounted on the outer surface of said cover plate adjacent said pendulum; and
(i) holder means (74, 76) on the inside surface of said cover plate for engaging an edge portion of said pendulum driving means, said holder means cooperating with said pair of threaded devices to securely retain said driving means against the rear surface of said cover plate.

4,237,550

MULTIUSER PROTECTED OPTICAL DATA BUS DISTRIBUTION SYSTEMS

Peter D. Steensma, Midland Park, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 8, 1979, Ser. No. 46,979
Int. Cl.³ G02B *5/14, 5/16;* G08B *13/18*
U.S. Cl. 370—4 **16 Claims**



1. A multiuser protected optical data bus distribution system comprising:

an optical fiber capable of propagating thereon two different signals independent of each other, said fiber being coupled in a loop to a control station and N equally spaced users, where N is equal to an integer greater than one, and propagating data between said N users in time sequence in one direction around said loop; and

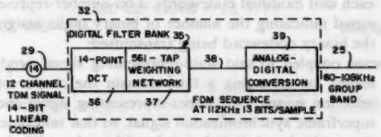
first means disposed in said control station to transmit a first masking signal on said fiber in a direction around said loop opposite to said given direction to prevent interception of said data, said first masking signal being turned off at a given time for a predetermined period of time to provide a window in said first masking signal which arrives at each of said N users in time sequence coincident with said data intended for each of said N users to enable each of said N users to recover said data intended therefore.

4,237,551

TRANSMULTIPLEXER

Madihally J. Narasimha, Mountain View, Calif., assignor to Granger Associates, Santa Clara, Calif.

Filed Dec. 22, 1978, Ser. No. 972,458
Int. Cl.³ H04J *4/00*
U.S. Cl. 370—50 **7 Claims**



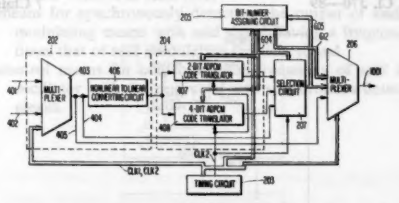
1. A transmultiplexer for converting a first multi-channel time division multiplexed signal into a second corresponding multi-channel frequency division multiplexed signal, said transmultiplexer comprising: discrete cosine transform processor means connected to receive a linearly coded time division multiplexed signal representing said first signal for transforming said signal into a transformed signal, and weighting network means for weighting said transformed signal with predetermined real coefficients thereby forming a frequency division multiplexed signal corresponding to said time signal.

4,237,552

TIME DIVISION MULTIPLEXED TRANSMISSION SYSTEMS FOR TELEPHONE OR LIKE SIGNALS WITH FREQUENCY BAND COMPRESSION

Shinichi Aikoh; Kunihiko Niwa, and Atsushi Tomozawa, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1979, Ser. No. 51,291
Claims priority, application Japan, Jun. 22, 1978, 53-76022
Int. Cl.³ H04J *3/16*
U.S. Cl. 370—83 **6 Claims**



1. A digital transmission system for efficient transmission of time division multiplexed digital telephone signals, wherein a plurality of telephone signals are cyclically sampled and quantized so that each sampled value may be encoded into a binary codeword of a preset number of bits and that a series of said codewords equal in number to said telephone signals may constitute a frame defined by a frame synchronization signal and a series of a predetermined number of said frames may in turn constitute a superframe defined by a superframe synchronization signal, thereby to provide said time division multiplexed digital telephone signals, wherein said system comprises at the transmission end:

input means for receiving said time division multiplexed telephone signals;

means coupled to said input means in parallel and responsive to a state-representing signal for successively converting each said binary codewords into a plurality of modified codewords, said modified codewords being variably assigned comparatively smaller and greater numbers of binary digits depending on said state-representing signal, said comparatively greater number being equal to or smaller than said preset numbers; selection means supplied

in parallel with said modified codewords for selectively allowing in response to said state-representing signal one of said modified codewords to pass therethrough for each said binary codewords;

means coupled to said converting means and responsive to the output of said selection means for producing said state-representing signal in response to the corresponding one of at least one preceding frame, and for producing, for each said modified codewords, a bit-number-representing signal indicating the number of binary digits assigned to the binary codeword being transmitted;

means coupled to said state-representing signal producing means for arranging a time domain the output of said selection means, bit-number-representing signal and said superframe synchronization signal, so that said time division multiplexed digital signals with said modified codewords are provided; and means for generating timing pulses for controlling the operation of all the foregoing means; and

wherein said system comprises at the reception end:

input means for receiving said time division multiplexed digital signals with said modified codewords;

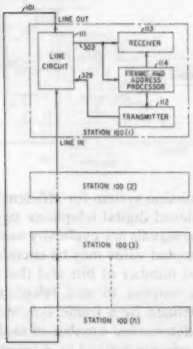
means responsive to said bit-number-representing signal for reproducing said binary codewords respectively from said modified codewords, thereby reproducing said time division multiplexed digital signals of unmodified codewords suited for ordinary decoding.

4,237,553

DATA PACKET MULTIPLEXING IN A STAGGERED FASHION

Arthur B. Larsen, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1978, Ser. No. 973,181
Int. Cl.³ H04J *6/00*
U.S. Cl. 370—89 **7 Claims**



1. In a transmission system conveying frames of data carrying interleaved data packets (200(N)-208(N)), each frame having a plurality of time slots (220-228), each data packet occupying corresponding time slots of a plurality of frames,

characterized by

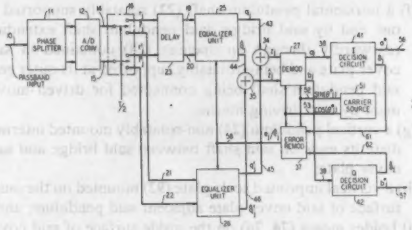
means (321', 322', 323', 324', 325', 326', 333') for positioning an initial portion of each of the packets in respectively exclusive ones of the frames, and means (402, 404, 405, 406, 414, 416, 417) for operatively connecting control equipment with the transmission system during the corresponding time slots of the exclusive frames occupied by the initial portion of each of the packets.

4,237,554

COEFFICIENT TAP LEAKAGE FOR FRACTIONALLY-SPACED EQUALIZERS

Richard D. Gitlin, Monmouth Beach; Howard C. Meadors, Jr., Ocean, and Stephen B. Weinstein, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 1, 1979, Ser. No. 16,495
Int. Cl.³ H04B *3/04*
U.S. Cl. 375—15 **34 Claims**



1. An arrangement for processing a received data signal which was transmitted over a transmission channel at a rate of 1/T symbols per second comprising

sampling means (11, 12, 16) for forming a succession of samples of said signal at a predetermined rate

means for forming a decision as to the value of each one of said symbols and for forming an error signal associated with each symbol, the last-mentioned means comprising means (25, 26) for multiplying each successive one of an ordered plurality of coefficients with a successive respective one of a plurality of said samples associated with said decision, means (27, 34, 35, 51) responsive to the resulting products for generating an equalized signal, and means (41, 42) for quantizing said equalized signal to form said decision, the value of said error signal being a function of the value of said equalized signal and the value of said one of said symbols, and

updating means (121, 122) for determining at least a first value for each one of said coefficients by additively combining first and second terms with a previous value of that coefficient, said first term being a function of the error signal associated with a predetermined one of said symbols, said updating means including means (180) for subtracting the magnitude of said second term from said previous value if that value has a positive sign and for adding the magnitude of said second term to said previous value if that value has a negative sign,

said updating means characterized in that the magnitude of said second term is independent of the magnitudes of any of said coefficients.

4,237,555

AUTOMATIC MODULATION SYSTEM

Milton Dishal, Clifton, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,626
Int. Cl.³ H04B *1/02*; H03C *1/06*
U.S. Cl. 455—108 **64 Claims**

1. A multistate feedback controlled modulation system for linearizing and stabilizing an amplifier having an input-output characteristic including a linear portion and at least a lower non-linear portion comprising:

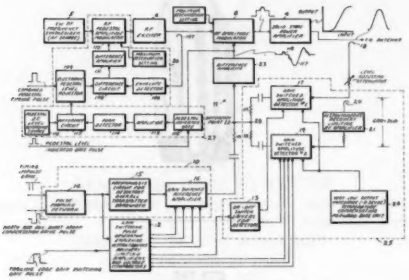
an extended range, gain controlled detector system disposed in a first feedback loop coupled to the output and input of said amplifier;

a gain controlled reference signal source coupled to an output of said detector system to provide a difference signal in said first feedback loop;

a gain controlling pulse generator coupled to said source and said detector system to simultaneously control the gain of said source and the gain of said detector system to control the shape of said difference signal so as to linearize said lower non-linear portion of said characteristic without loss of loop stability and without causing amplitude distortion in said first feedback loop;

an exciter to provide controllable amplitude, rectangular pulses;

a first amplitude modulator disposed in said first feedback loop coupled to the input of said amplifier and the output of said exciter responsive to an amplified version of said difference signal and said rectangular pulses;



a second feedback loop coupled between an output and an input of said exciter to provide an extremely flat top for each of said rectangular pulses; and

a third feedback loop coupled to said first and second feedback loops responsive to a predetermined gated portion of said amplified version of said difference signal to produce a control signal for said second feedback loop to accurately control the amplitude of said flat top rectangular pulses so as to hold the amplitude of a baseline portion of the output signal of said modular exactly at the threshold of said linearized characteristic.

4,237,556

SUPERHETERODYNE RECEIVER HAVING DISTORTION REDUCING CIRCUITRY

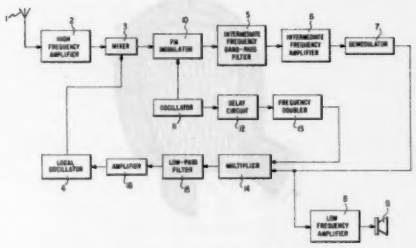
Michinori Naito, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1979, Ser. No. 17,815

Claims priority, application Japan, Mar. 6, 1978, 53-25232; Sep. 20, 1978, 53-116116; Sep. 20, 1978, 53-116117; Sep. 20, 1978, 53-116118; Oct. 2, 1978, 53-121340

Int. Cl.[3] H04B *1/10, 1/16*

U.S. Cl. 455—154 **24 Claims**



1. A superheterodyne receiver comprising

a local oscillator;

a mixer responsive to an output of said local oscillator and a signal received by the receiver to provide an intermediate frequency signal;

a further oscillator for generating a fixed modulating frequency;

means for frequency modulating said intermediate frequency signal with said fixed modulation frequency;

means for demodulating the intermediate frequency signal whose frequency has been modulated with said fixed modulation frequency;

means for providing a signal having a frequency n times that of said fixed modulation frequency where n is an integer whose value is at least two;

means for synchronously detecting the output of said demodulating means with said signal having a frequency n times that of said modulation frequency, and

control means for controlling the frequency of said local oscillator with the output of said synchronous detecting means.

DESIGNS

DECEMBER 2, 1980

257,571
JACKET
Ryoichi Inoue, Ashiya, Japan, assignor to Descente Limited, Osaka, Japan
Filed Apr. 21, 1978, Ser. No. 899,016
Claims priority, application Japan, Feb. 1, 1978, 53-3141
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—192

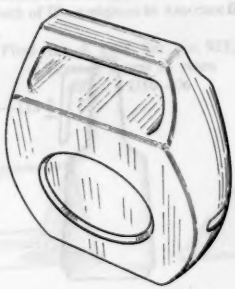
257,572
COMBINED KEY RING AND BOB
Michael W. Wefler, 416 McKinley Ave., Hobart, Ind. 46342
Filed Feb. 14, 1979, Ser. No. 12,233
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61

257,573
SEAT
Donald E. Hanaford, 4601 S. 35th St., Phoenix, Ariz. 85040
Filed Oct. 16, 1978, Ser. No. 951,468
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67

257,574
DIAMOND DESIGN CHAIR BACK
Donald E. Hanaford, 4601 S. 35th St., Phoenix, Ariz. 85040
Filed Oct. 16, 1978, Ser. No. 951,470
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197

257,575
WOOD SPLITTER
Jackson M. Ideen, P.O. Box 9, Broken Bow, Nebr. 68822
Filed Nov. 13, 1978, Ser. No. 960,430
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—47

257,576
REEL FOR ELECTRIC CORD
Bert Bobrovniczky, Don Mills, Canada, assignor to Noma Lites Canada Limited, Scarborough, Canada
Filed Mar. 30, 1979, Ser. No. 25,670
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—359



257,577
BOTTLE, OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 4, 1979, Ser. No. 27,084
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—381

257,578
BOTTLE, OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 4, 1979, Ser. No. 27,085
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378

257,579
BOTTLE, OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 4, 1979, Ser. No. 27,086
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—381

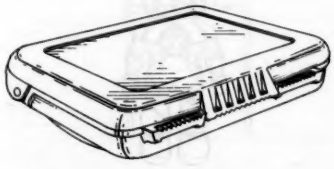
257,580
BOTTLE, OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 4, 1979, Ser. No. 27,087
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—383

257,581
BOTTLE OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 4, 1979, Ser. No. 27,088
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—381

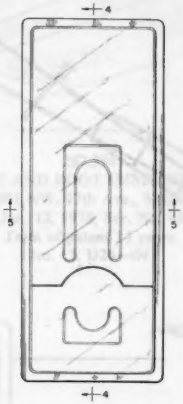
257,582
BOTTLE OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 30, 1979, Ser. No. 34,623
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—381

257,583
BOTTLE OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 30, 1979, Ser. No. 34,625
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—383

257,584
PILL BOX
Henry Finkel, Westmount, Canada, assignor to Promo Ad Canada Ltd./Ltée., Montreal, Canada
Filed Jul. 5, 1978, Ser. No. 922,261
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—423

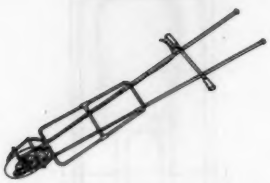


257,585
PACKAGING CONTAINER FOR A DENTAL INSTRUMENT
Sigmund A. Neuwirth, 30 St. George's Rd., Golders Green, London NW11 OLR, England
Filed Dec. 15, 1978, Ser. No. 969,731
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—425

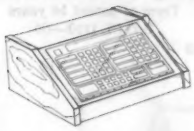


257,586
HIGHWAY DELINEATOR
Sidney A. Heenan, Park Ridge, and Robert M. Flanagan, Lincolnshire, both of Ill., assignors to Amerace Corporation, New York, N.Y.
Filed Aug. 4, 1978, Ser. No. 931,107
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—113

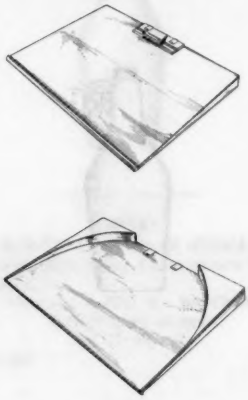
257,587
GAME CART
Ratko Doyich, 15 E. San Bernardino Ave., Redlands, Calif. 92373
Filed Jun. 22, 1978, Ser. No. 918,315
Term of patent 7 years
Int. Cl. D12—*02*
U.S. Cl. D12—21



257,588
CUSTOMER SATISFACTION TERMINAL, OR THE LIKE
Ernest R. Cadotte, Knoxville, Tenn.; Gerald P. Hester, and Martin D. Husted, both of Santa Ana, Calif., assignors to MSI Data Corporation
Filed Oct. 13, 1978, Ser. No. 951,319
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—45

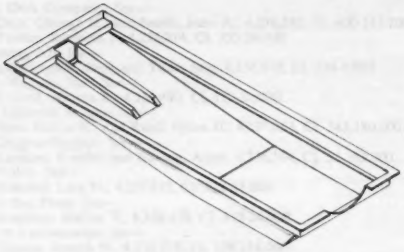


257,589
STEERING WHEEL DESK
Robert W. Shaffert, Philadelphia, Pa., assignor to Falcon Industries, Inc., Chalfont, Pa.
Filed Oct. 19, 1978, Ser. No. 952,702
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—88

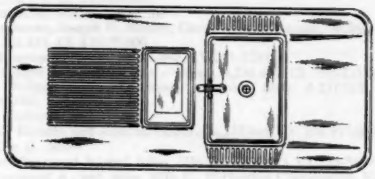


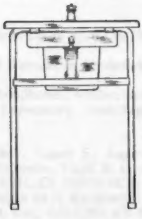
257,590
ASTRONAUT DOLL
Timothy Jackson, Morristown, N.J., assignor to Be A Doll, Inc., New York, N.Y.
Filed Jan. 29, 1979, Ser. No. 7,413
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—177

257,591
EXIT POOL FOR AN AMUSEMENT WATER SLIDE
Robert H. Brown, 874 E. Woodward Rd., Manteca, Calif. 95336
Filed Jan. 19, 1979, Ser. No. 4,665
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—252

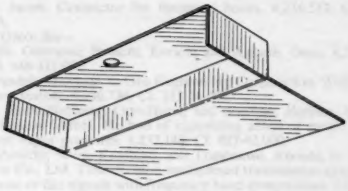


257,592
COMBINED SINK AND TABLE
Albert L. Kinsey, 2395 Delaware Ave., #84, Santa Cruz, Calif. 95060
Filed Nov. 9, 1978, Ser. No. 959,389
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—61



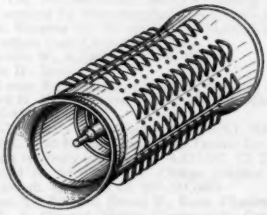


257,593
COMBINED FIREPLACE AIR VENT AND ASH DROP COVER
Harold E. Vogel, 1009 Sylvia, Sedalia, Mo. 65301
Filed Dec. 26, 1978, Ser. No. 973,381
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



257,594
ANKLE AND FOOT IMMOBILIZER
Alan Finnieston, 1901 NW. 17th Ave., Miami, Fla. 33125
Filed Jun. 12, 1978, Ser. No. 914,809
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64

257,595
HAIR ROLLER
James H. Bullock, Trumbull, Conn., assignor to Clairol Incorporated
Filed May 25, 1979, Ser. No. 42,647
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—37



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TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF DECEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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AB Volvo: *See*—
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Ab Volvo Penta: *See*—
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Abbott Laboratories: *See*—
Genese, Joseph N., 4,236,515, Cl. 128-214.00G.
Hetherington, Ross W.; Armstrong, Kenneth J.; Ireland, Leonard; Canty, John; and Banfield, Ernest R., 4,236,305, Cl. 29-774.000.
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Abler, Norman C.; Zimmerman, Earlyn E.; and Swihart, Wayne A., to Borg Textile Corporation. Manufacture of knitted synthetic fur fabric. 4,236,286, Cl. 28-160.000.

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Aliev, Sakhib M. O.; Aliev, Vagab S.; Agaeva, Magira A. K.; Gadzhiev, Tofik A.; Guseinov, Vagif B. G. O.; and Ismailova, Zemfira A. B. K., 4,237,041, Cl. 260-33.6UA.

Agence Nationale de Valorisation de la Recherche: *See*—
Rouxel, Jean; and Trichet, Luc, 4,237,201, Cl. 429-104.000.

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Aisin Seiki Kabushiki Kaisha: *See*—
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Reed, Philip W.; and Alexander, John D., 4,236,406, Cl. 73-61.10R.

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Aliev, Sakhib M. O.; Aliev, Vagab S.; Agaeva, Magira A. K.; Gadzhiev, Tofik A.; Guseinov, Vagif B. G. O.; and Ismailova, Zemfira A. B. K., 4,237,041, Cl. 260-33.6UA.
Aliev, Sakhib M. O.; Aliev, Vagab S.; Guseinov, Novruz I. O.; Nagiev, Vagif A. O.; and Sultanov, Nuri T. O., 4,237,323, Cl. 568-738.000.

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Raybon, James C., Jr.; Darby, Malcolm O.; and Derrick, Thomas V., Jr., 4,237,187, Cl. 428-399.000.
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Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. 1,9-Dihydroxyoctahydrophenanthrenes. 4,237,133, Cl. 424-248.520.

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Jaretsky, Michael G.; and Lax, Michael, 4,236,822, Cl. 356-256.000.

Bakewell, Henry P., Jr.; and Johnson, Marguerite A., to United States of America, Navy. Frequency response tester. 4,236,401, Cl. 73-1.0DV.

Baldini, Alberto: *See*—
Leoni, Roberto; Baldini, Alberto; and Angelini, Gianfranco, 4,237,274, Cl. 536-56.000.

Baldwin, Samuel L., to General Electric Company. Luminaire. 4,237,528, Cl. 362-263.000.

Baliga, Bantval J., to General Electric Company. Fabrication of grown-in p-n junctions using liquid phase epitaxial growth of silicon. 4,236,947, Cl. 148-171.000.

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Joekel, Alfred; Langen, Hans; and Denner, Peter, 4,236,299, Cl. 29-727.000.

Ball Corporation: *See*—
Byers, Stanley A.; McKee, James R., Sr.; and Gridley, Marvin C., 4,236,929, Cl. 106-52.000.

Balland, Michel: *See*—
Moers, Daniel; and Balland, Michel, 4,236,563, Cl. 152-354.00R.

Balzer, Juliane; Engelhardt, Friedrich; Ribka, Joachim; and Schidlo, Wolfram, to Cassella Aktiengesellschaft. Process for the preparation of crosslinked copolymers, the process products obtained, and their use in textile printing. 4,237,249, Cl. 525-369.000.

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Quack, Jochen M.; Reng, Alwin; Balzer, Juliane; Engelhardt, Friedrich; and Ribka, Joachim, 4,237,243, Cl. 525-154.000.

Bamberger, Carlos E.; and Robinson, Paul R., to United States of America, Energy. Thermochemical cyclic system for splitting water and/or carbon dioxide by means of cerium compounds and reactions useful therein. 4,237,105, Cl. 423-306.000.

Banfield, Ernest R.: *See*—
Hetherington, Ross W.; Armstrong, Kenneth J.; Ireland, Leonard; Canty, John; and Banfield, Ernest R., 4,236,305, Cl. 29-774.000.

Bannai, Kiyoshi; Ohnuma, Norio; Ishizuka, Seiichi; Kubo, Junji; and Naruchi, Tatuyuki, to Teijin Limited. 1α-Hydroxy-24-dehydrovitamin Dpharmaceutical compositions and uses thereof. 4,237,125, Cl. 424-236.000.

Bara, Anton J.: *See*—
Meyer, Walter; and Bara, Anton J., 4,236,651, Cl. 222-82.000.

Barcita, Jose M. Power transmission. 4,236,416, Cl. 74-52.000.

Barksdale, Lester T. Removable and foldable vehicle table. 4,236,461, Cl. 108-44.000.

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Dammann, Peter; and Frank, Benno, 4,236,323, Cl. 34-152.000.

Baron, George B., to Dresser Industries, Inc. Center pin assembly for power shovels. 4,236,863, Cl. 414-687.000.

Barrer, Daniel E., to Lubrizol Corporation, The. Tartarimides and lubricants and fuels containing the same. 4,237,022, Cl. 252-51.50A.

Barrow, Randall G. Bearing carrier puller for outboard motors. 4,236,291, Cl. 29-256.000.

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Cort, Joseph H.; Barth, Tomislav; Jost, Karel; and Veznik, Zdenek, 4,237,119, Cl. 424-177.000.

Barthell, Eduard: *See*—
Kuster, Erich; Goossens, Bernhard; Barthell, Eduard; and Dahmen, Kurt, 4,237,067, Cl. 260-561.00N.

Barthelme, Richard W.; Leonard, John B.; and Biercuk, John N., to Grumman Aerospace Corporation. Ship compatible launch, retrieval and handling system for (VTOL) aircraft. 4,236,686, Cl. 244-116.000.

Barton, Danny B., to Mobay Chemical Corporation. Preparation of lower alkyl thiosemicarbazides. 4,237,066, Cl. 260-552.0SC.

Barton, Peter, to B. C. Barton & Son Limited. Tube joint. 4,236,846, Cl. 403-298.000.

Barton, William M., Jr., to Cipher Data Products Incorporated. Slot loaded, low profile magnetic tape drive. 4,236,682, Cl. 242-198.000.

Bartoszek, John A.; and Hirdler, Louis C., to Olin Corporation. Process for the production of concentrated cyanuric acid slurries. 4,237,285, Cl. 544-192.000.

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Krapf, Heinz; Oppenlaender, Knut; and Uhl, Guenter, 4,237,320, Cl. 568-609.000.
Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, 4,237,330, Cl. 585-807.000.
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, 4,237,318, Cl. 562-609.000.
Thieme, Peter C.; Frickel, Fritz-Frieder; Hagen, Helmut; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,237,278, Cl. 542-429.000.

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Bass, Robert W.; Ferguson, Helaman R. P.; Fletcher, Harvey J.; Gardner, John H.; Harrison, B. Kent; and Larsen, Kenneth M., to Brigham Young University. Confinement of high temperature plasmas. 4,236,964, Cl. 176-3.000.

Bassman, Seymour: *See*—
Turner, John; Koster, Richard A.; and Bassman, Seymour, 4,236,441, Cl. 89-40.00F.

Bataille, Jean-Roger. Dynamic device for holding the foot and the leg in position in a rigid structure. 4,236,725, Cl. 280-611.000.

Batjukov, Vladimir I.; Vjugov, Oleg N.; Fadeev, Alexandr I.; and Shkhian, Tsolak G. Gripping means for fuel assemblies of nuclear reactor. 4,236,967, Cl. 176-30.000.

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Ljubivy, Alexandr G.; Batjukov, Vladimir I.; Shkhian, Tsolak G.; and Fadeev, Alexandr I., 4,236,969, Cl. 176-61.000.

Batstone, Roger J., to French Masterpieces, Incorporated. Automatic swimming pool cover. 4,236,258, Cl. 4-172.120.

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Bauchk, Friedrich G. K.: *See*—
Gutmann, Gunter; Kistrup, Holger; Bauchk, Friedrich G. K.; and M/ler, Gerd, 4,237,196, Cl. 429-50.000.

Baumann, Kai J.: *See*—
Ying, Sui-chun; Smith, Joseph L., Jr.; and Baumann, Kai J., 4,237,392, Cl. 310-52.000.

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Bayer Aktiengesellschaft: *See*—
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Dieterich, Dieter, 4,237,250, Cl. 525-440.000.
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Bayliss, John P., to Girling Limited. Friction pad assemblies for rail vehicle brakes. 4,236,612, Cl. 188-242.000.

BBC Brown, Boveri & Co Ltd: *See*—
De Mesmaeker, Ivan; and De Mesmaeker, Ivan, 4,237,511, Cl. 361-80.000.
De Mesmaeker, Ivan; and De Mesmaeker, Ivan, 4,237,511, Cl. 361-80.000.

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Bellati, Hans; and Brunner, Heinz, 4,236,425, Cl. 74-573.00R.
Hecht, Siegfried, 4,237,338, Cl. 178-23.00A.
Muller, Rene; and Stucki, Samuel, 4,236,993, Cl. 204-294.000.
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Beccaris, Carlo, to Societe Anonyme Francaise du Ferodo. Double clutch assembly. 4,236,620, Cl. 192-48.800.
Beck, Richard A.; and Presley, Glen T., to Parno Corp. Auxiliary drive system. 4,236,595, Cl. 180-243.000.
Becker, Frank C.: *See*—
Williams, John W.; and Becker, Frank C., 4,237,166, Cl. 424-310.000.
Becker, Larry W., to Betz Laboratories, Inc. Method of breaking oil-in-water emulsions. 4,237,005, Cl. 210-43.000.
Beckett, Joseph E. Harvesting machine. 4,236,581, Cl. 171-56.000.
Beckley, Philip; and Mildoon, John, to British Steel Corporation. Improvements in safety device for lifting magnets. 4,237,455, Cl. 340-685.000.
Beckman Instruments, Inc.: *See*—
Loeb, Phillip J., 4,236,511, Cl. 128-731.000.
Becnel, Larry H., to General Dynamics Corporation Pomona Division. Toggle latch opening and closing tool. 4,236,427, Cl. 81-3.00R.
Becton Dickinson and Company: *See*—
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Beecham Group Limited: *See*—
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,237,161, Cl. 424-283.000.
Wootton, Gordon; and Moore, Richard W., 4,237,131, Cl. 424-248.510.
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Beguhn, Gordon H., to American Can Company. Dispenser package. 4,236,652, Cl. 222-92.000.
Bell, Cyril F. Paper folding apparatus. 4,236,704, Cl. 270-94.000.
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Bonyhard, Peter I., 4,237,544, Cl. 364-900.000.
Brown, Earl F.; and Netravali, Arun N., 4,237,484, Cl. 358-142.000.
Gitlin, Richard D.; Meadors, Howard C., Jr.; and Weinstein, Stephen B., 4,237,554, Cl. 375-15.000.
Kohl, Paul A., 4,236,976, Cl. 204-15.000.
Larsen, Arthur B., 4,237,553, Cl. 370-89.000.
Lazay, Paul D., 4,236,904, Cl. 65-2.000.
Robbins, Murray; and Staudinger, Annemarie, 4,236,924, Cl. 75-211.000.
Bell, Weldon K.; and Chang, Clarence D., to Mobil Oil Corporation. Synthesis gas conversion. 4,237,063, Cl. 260-449.00R.
Bellati, Hans; and Brunner, Heinz, to BBC Brown, Boveri & Co. Ltd. Balancing arrangement for rotating machinery. 4,236,425, Cl. 74-573.00R.
Beller, Melchior P.: *See*—
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Pierrel, Michel; and Bellocci, Rio, 4,236,571, Cl. 164-85.000.
Beloit Corporation: *See*—
Busker, Leroy H., 4,236,963, Cl. 162-271.000.
Belony, Jean-Claude M. J. Tile or card game. 4,236,720, Cl. 273-292.000.
Belt, Wesley D. Method of making metal beam for geodesic dome structure. 4,236,473, Cl. 113-116.0HA.
Bendix Corporation, The: *See*—
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Beretta, Pier C., to Fabrica d'Armi Pietro Beretta S.p.A. Reversible sliding magazine latch for pistols. 4,236,337, Cl. 42-7.000.
Berg, Peter G., to Texas Instruments Incorporated. Automatic choke system. 4,237,077, Cl. 261-39.00E.
Berg, Peter G., to Texas Instruments Incorporated. Heated automobile mirror. 4,237,366, Cl. 219-219.000.
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Horne, John M., 4,237,191, Cl. 428-542.000.
Bergh, John C., to Wheelabrator-Frye Inc. Mechanical actuation of furnace grate beams. 4,236,466, Cl. 110-281.000.
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Trott, Delano B., 4,237,014, Cl. 210-330.000.
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Davis, Forrest W., 4,237,403, Cl. 315-98.000.
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Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., to American Cyanamid Company. Novel 2-substituted-3,4-epoxycyclopentan-1-ones, 2-substituted-3,4-epoxycyclopentan-1-ols, and various 2-substituted-cyclopentenones. 4,237,316, Cl. 562-503.000.
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Boettge, Horst; Mitzel, Wilhelm; Bernardi, Herbert; Geier, Josef; Osswald, Norbert; von Aschwege, Gerd; and Schaetz, Robert, 4,236,639, Cl. 209-534.000.
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Berrier, Bobby L., to United States of America, National Aeronautics and Space Administration. Thrust augmented spin recovery device. 4,236,684, Cl. 244-52.000.
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Walker, Leon; and Berry, Howard S., 4,237,001, Cl. 209-442.000.
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Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Schreyer, Gerd, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the recovery of pyridine and 3-methylpyridine. 4,237,299, Cl. 546-250.000.
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Taliaferro, James R., 4,236,498, Cl. 126-120.000.
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Bhatia, Harsaran S.: *See*—
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Bhattacharya, Debanshu; Quinto, Dennis T.; and Holowaty, Michael O., to Inland Steel Company. Semi-finished steel article and method for producing same. 4,236,939, Cl. 148-2.000.
Bialski, Alexander; Gentile, Camillo; and Sepall, Ola, to Reed Ltd. Paper sorting apparatus. 4,236,676, Cl. 241-74.000.
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Billet, Rene, to Societe Anonyme Francaise du Ferodo. Caliper brake with axially elongate cylindrical braking member. 4,236,610, Cl. 188-76.000.
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Ehrat, Rodolphe, 4,237,065, Cl. 260-502.500.
Bissar, Saadi J., to Timex Corporation. Electrochromic display and method for making same. 4,236,792, Cl. 350-357.000.
Bitler, Harold C., to Fisher Stove Works. Dual action safety latch for stove door. 4,236,501, Cl. 126-197.000.
Bixby, James A.: *See*—
Lemke, James U.; and Bixby, James A., 4,237,462, Cl. 343-5.00R.
Bjor, Hakon E.; and Raad, Bjorn H., to A/S Elektrisk Bureau. Directional coupler. 4,237,463, Cl. 343-180.000.
Blach, Josef A. Screw machine for processing materials of solid, pasty and liquid consistency. 4,236,833, Cl. 366-85.000.
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Blackwell, Jennings P., to Phillips Petroleum Company. Salts of arylalkanoic acids as corrosion inhibitors for poly(arylene sulfide)s. 4,237,039, Cl. 260-29.20R.
Bladykas, Theodore S. Process and apparatus for producing stockpileable asphaltic concrete. 4,236,675, Cl. 241-65.000.
Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., to United States of America, Agriculture. Process for producing transfer printed cotton and cotton blends. 4,236,890, Cl. 8-2.50A.
Blank, Jochen; and Bobe, Dieter, to Terrot Strickmaschinen GmbH. Knitting machine. 4,236,390, Cl. 66-149.00R.
Blenkinsop, Philip T.; McLean, Graham W.; and Turner, David, to P A Management Consultants Limited. Electromagnetic machines with permanent magnet excitation. 4,237,396, Cl. 310-154.000.
Block, Alvin, to Intimate Jewels Inc. Earring. 4,236,385, Cl. 63-12.000.
Block, Thomas S., to Clarke-Gravely Corporation. Vertical axis brush. 4,236,269, Cl. 15-180.000.
Blomberg, Peter E.; and Lindmark, Magnus C. W., to Aktiebolaget Electrolux. Control system for automatic delayed operation of a gas operated absorption refrigerator. 4,236,380, Cl. 62-148.000.
Bobe, Dieter: *See*—
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Bochis, Richard J.; and Kulsa, Peter, to Merck & Co., Inc. Certain 6-substituted-2-pyridinamines. 4,237,300, Cl. 546-297.000.
Bodanszky, Miklos. Polypeptides and methods of preparation. 4,237,046, Cl. 260-112.50R.
Boden, Joseph. Prefabricated building components. 4,236,361, Cl. 52-204.000.
Bodine, Albert G. Method and apparatus for sonically extracting oil well liners. 4,236,580, Cl. 166-301.000.
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Boettge, Horst; Mitzel, Wilhelm; Bernardi, Herbert; Geier, Josef; Osswald, Norbert; von Aschwege, Gerd; and Schaetz, Robert, to G.A.O. Gesellschaft fur Automation und Organisation mbH. Method of automatically sorting thin sheet articles. 4,236,639, Cl. 209-534.000.

Bonomi, Antonio, to De La Rue Giori S.A. Installation for the continuous cleaning of a wiping roller of a machine for copper-plate printing. 4,236,450, Cl. 101-425.000.

Bonyhard, Peter I., to Bell Telephone Laboratories, Incorporated. Magnetic memory organization. 4,237,544, Cl. 364-900.000.

Boot, David: *See*—
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Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., to Sperry Corporation. Table driven decision and control logic for digital computers. 4,237,532, Cl. 364-200.000.

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Bottum, Charles F. Rope attaching device. 4,236,281, Cl. 24-115.000.

Botzler, Ludwig, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Digitally compatible servomotor. 4,236,442, Cl. 91-375.00R.

Boulanger, Henry J.; and Puccini, Richard E., to Texas Instruments Incorporated. Keyboard apparatus. 4,237,351, Cl. 200-5.00A.

Boultinghouse, Harold D., to Phillips Petroleum Company. Fluorinated poly(arylene sulfides). 4,237,156, Cl. 427-248.00A.

Bowen, David; and Boot, David, to Lucas Electrical Company, Ltd., The. Conveyor unit. 4,236,631, Cl. 198-583.000.

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Bradley, Robert W.; Bray, Donald L.; and Peterson, Raymond L., to Bush Universal, Inc. Technique and articles for forming shoe shanks. 4,236,268, Cl. 12-146.00S.

Brand, Abraham: *See*—
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Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, to Deutsche Texaco Aktiengesellschaft. Method of conducting reactions in a trickle-type reactor. 4,237,325, Cl. 568-896.000.

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Bravin, Ben, to Dynamex Corporation. Traverse control system. 4,236,373, Cl. 57-71.000.

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Wheeler, Raymond L., 4,236,593, Cl. 180-128.000.

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Rudd, Frederick V.; and Bracewell, Tom, deceased, 4,236,942, Cl. 148-16.600.

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Beckley, Philip; and Mildoon, John, 4,237,455, Cl. 340-685.000.

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Popoff, Michel; Brochon, Marie-Jose; and Brault, Georges, 4,237,096, Cl. 422-102.000.

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Smith, Lawther O.; Howard, Timothy L.; and Broitman, Kalman, 4,236,845, Cl. 403-144.000.

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Theurer, Josef; and Brunninger, Manfred, 4,236,452, Cl. 104-2.000.

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Epstein, David; and Bugg, John, 4,236,569, Cl. 164-43.000.

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Tang, Paul R., 4,236,779, Cl. 339-143.00R.

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Clark, Becky J., 4,237,447, Cl. 340-147.00T.
Ragle, Herbert U., 4,237,503, Cl. 360-99.000.
Sprenkle, George J., 4,236,303, Cl. 29-762.000.

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Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,237,289, Cl. 544-279.000.

Burtis, Eric F.: *See*—
Cordova, James, 4,237,459, Cl. 340-756.000.

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Bradley, Robert W.; Bray, Donald L.; and Peterson, Raymond L., 4,236,268, Cl. 12-146.00S.
Busker, Leroy H., to Beloit Corporation. Apparatus for texturing untextured dry tissue web. 4,236,963, Cl. 162-271.000.
Buurma, Gerald B., to National Semiconductor Corporation. Switching comparator. 4,237,390, Cl. 307-362.000.
Buzzi, Ugo, to Albe S.A. Apparatus for orientating elongated articles, such as bodies of writing pens. 4,236,624, Cl. 198-399.000.
B.V. Neratoom: *See*—
Pennock, Theodorus A. F., 4,236,721, Cl. 277-14.00V.
BWG Bergwerk- und Walzwerk-Maschinenbau GmbH: *See*—
Noe, Oskar, 4,236,626, Cl. 198-488.000.
Byers, Stanley A.; McKee, James R., Sr.; and Gridley, Marvin C., to Ball Corporation. Rapid strength development in compacting glass batch materials. 4,236,929, Cl. 106-52.000.
Byrnes, Eugene W.: *See*—
Boyes, Robert N.; Duce, Benjamin R.; Smith, Emil R.; and Byrnes, Eugene W., 4,237,068, Cl. 260-562.00N.
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Stenz, Paul; and Kordt, Hans-Herbert, 4,236,780, Cl. 339-198.00G.
C.G.S. Istrumenti Di Misura S.p.A.: *See*—
Fedrigo, Renzo, 4,237,467, Cl. 346-76.00R.
Cabot Corporation: *See*—
Johnson, Timothy E.; and Giuffrida, John, 4,237,023, Cl. 252-70.000.
Calfee, Richard V.: *See*—
Sluetz, James E.; and Calfee, Richard V., 4,236,525, Cl. 128-419.00P.
Calvert, Ronald J., to Hills Industries Limited. Clothes hoist elevating means. 4,236,419, Cl. 74-89.150.
Campana, Patsie C. Fabricated opening cover and cover assembly. 4,236,972, Cl. 202-242.000.
Campbell, Simon F.; Danilewicz, John C.; and Greengrass, Colin W., to Pfizer Inc. Antihypertensive 4-amino-2-[4-(substituted-alkoxy)-piperidino)]quinazolines. 4,237,138, Cl. 424-251.000.
Campenon-Bernard Cetra: *See*—
Compte, Jean, 4,236,698, Cl. 256-23.000.
Canadian Patents & Development Ltd.: *See*—
Torkko, Reino, 4,236,341, Cl. 43-88.000.
Candor, James T. Method and apparatus for electrostatically forming a layer of material from a slurry thereof. 4,236,317, Cl. 34-1.000.
Canez, Antonio R. Appliance theft alarm. 4,237,450, Cl. 340-571.000.
Canon Kabushiki Kaisha: *See*—
Aoki, Kanemasa, 4,237,394, Cl. 310-113.000.
Endo, Ichiro; Kobayashi, Hajime; Yano, Yasuhiro; and Muramatsu, Takao, 4,237,213, Cl. 430-353.000.
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Sekiguchi, Takeshi, 4,237,475, Cl. 358-10.000.
Uchidoi, Masanori; Kawamura, Masaharu; Shigeta, Yoshihiro; Sugiura, Yoji; Yamamoto, Hiroshi; and Tezuka, Nobuo, 4,236,802, Cl. 354-268.000.
Yamada, Yu, 4,236,789, Cl. 350-183.000.
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Cantalupo, Giuseppe; De Servi, Sergio; and Lepori, Agostino, to Montedison S.p.A. Process for preparing vulcanizable acrylic elastomers. 4,237,258, Cl. 526-273.000.
Cantrell, Ben H.; and Lewis, Bernard L., to United States of America, Navy. High-speed digital pulse compressor. 4,237,461, Cl. 343-5.0FT.
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Hetherington, Ross W.; Armstrong, Kenneth J.; Ireland, Leonard; Canty, John; and Banfield, Ernest R., 4,236,305, Cl. 29-774.000.
Capelle, Anton; and Scholten, Heinz, to Chemische Werke Huls AG. Suspension agent for synthetic resin powders. 4,237,040, Cl. 260-29.20N.
Cappucci, Joseph D., to Merrimac Industries Incorporated. Ridge waveguide mode suppressor. 4,237,434, Cl. 333-202.000.
Carborundum Company, The: *See*—
Smoak, Richard H., 4,237,085, Cl. 264-65.000.
Cardarelli, Nathan F. Biologically active insecticide containing polymeric formulation. 4,237,113, Cl. 424-78.000.
Cardarelli, Nathan F., to Environmental Chemicals, Inc. Method and composition for the long term controlled release of a non-persistent organotin pesticide from an inert monolithic thermoplastic dispenser. 4,237,114, Cl. 424-78.000.
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Gilford, Saul R.; Emary, Robert J.; and Carey, Glen A., 4,236,825, Cl. 356-414.000.
Carlson, David W.: *See*—
Halasa, Adel F.; Carlson, David W.; and Hall, James E., 4,237,245, Cl. 525-272.000.
Carlsson, John, to Stiftelsen Kalmarsundsgruppen. Releasable locking device for pipes, shafts and the like. 4,236,609, Cl. 188-67.000.
Carlyle, Ian C.; Sleigh, Thomas; and Savage, David S., to Akzona Incorporated. 2β, 16β-bis-piperidino-androstanes. 4,237,126, Cl. 424-241.000.
Carra, James A. Animal pool with lift platform. 4,236,489, Cl. 119-158.000.
Carradine, James. Portable traction apparatus. 4,236,265, Cl. 5-508.000.
Carrier Corporation: *See*—
Carter, Jerry L., 4,237,442, Cl. 338-180.000.
Fraser, Bruce A.; and Yannascoli, Donald, 4,236,876, Cl. 417-250.000.
Carter, Jerry L., to Carrier Corporation. Electrical resistance element for variable resistance devices. 4,237,442, Cl. 338-180.000.
Cassella Aktiengesellschaft: *See*—
Balzer, Juliane; Engelhardt, Friedrich; Ribka, Joachim; and Schidlo, Wolfram, 4,237,249, Cl. 525-369.000.
Castera, Jean-Paul; and Hepner, Georges, to Thomson-CSF. Device for modulating optical radiation by a variable magnetic field. 4,236,782, Cl. 350-96.130.
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Hepner, Georges; and Castera, Jean-Paul, 4,236,783, Cl. 350-96.130.
Castner, J. Fred, Sr.; and Castner, John F., Jr., to Castner, J. Fred, Sr. Cotton swab vender. 4,236,637, Cl. 206-467.000.
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Castner, J. Fred, Sr.; and Castner, John F., Jr., 4,236,637, Cl. 206-467.000.
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Buirski, David P.; and Hedley, Peter H., 4,236,474, Cl. 114-56.000.
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CAW Industries, Inc.: *See*—
Willard, John W., Sr., 4,237,101, Cl. 423-20.000.
Cayou, James S., to K & S Industries, Inc. Flexible line trimmer with line feeding apparatus. 4,236,309, Cl. 30-276.000.
Ceintrey, Claude G., to La Cellophane. Photochromic composition containing indoline spirobenzopyran and copolymer of PVC and imaged product thereof. 4,237,207, Cl. 430-17.000.
Celanese Corporation: *See*—
Yates, Derek N.; and Presta, John C., 4,236,386, Cl. 64-1.00S.
CENSOR patent- und Versuchs-Anstalt: *See*—
Mayer, Herbert E., 4,236,701, Cl. 269-21.000.
Centro Ricerche Fiat S.p.A.: *See*—
Alpini, Alessandro; and Ruspa, Giacomo, 4,236,407, Cl. 73-118.000.
Centro Sperimentale Metallurgico S.p.A.: *See*—
Vantini, Nereo; and Marini, Paolo, 4,236,986, Cl. 204-181.00N.
Cerny, Antonin: *See*—
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.
Certified Chemicals, Inc.: *See*—
Fedechko, Walter J., 4,237,024, Cl. 252-99.000.
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Cort, Joseph H.; Barth, Tomislav; Jost, Karel; and Veznik, Zdenek, 4,237,119, Cl. 424-177.000.
Chalisov, Jury I.: *See*—
Meierovich, Eduard A.; Shenderovich, Pavel B.; Chalisov, Jury I.; Golenchenko, Valery A.; Rybin, Igor V.; and Sukhushin, Vitaly B., 4,237,507, Cl. 361-19.000.
Champion International Corporation: *See*—
Gingerich, David L.; and Cohn, Robert, 4,236,482, Cl. 118-642.000.
Kanemura, Tom T., 4,236,660, Cl. 226-95.000.
Roccaforte, Harry I., 4,236,662, Cl. 229-39.00B.
Sorenson, John F.; and Locke, Frank W., 4,236,740, Cl. 229-36.000.
Champseix, Alain A.; Gueremy, Claude G. A.; and Le Fur, Gerard R., to Pharmindustrie. 4-(3-(4-Quinolyl)propyl)piperidines, their preparation and their use as medicines. 4,237,139, Cl. 424-258.000.
Chang, Clarence D.: *See*—
Bell, Weldon K.; and Chang, Clarence D., 4,237,063, Cl. 260-449.00R.
Chattha, Mohinder S., to Ford Motor Company. Coating compositions including hydroxy phosphate catalyst. 4,237,241, Cl. 525-110.000.
Chauvel, Alain Y.: *See*—
Berthier, Marc A.; and Chauvel, Alain Y., 4,236,462, Cl. 108-111.000.
Chemische Fabrik Stockhausen & Cie.: *See*—
Kuster, Erich; Goossens, Bernhard; Barthell, Eduard; and Dahmen, Kurt, 4,237,067, Cl. 260-561.00N.
Chemische Werke Huls AG: *See*—
Capelle, Anton; and Scholten, Heinz, 4,237,040, Cl. 260-29.20N.
Chen, Robert H. K., to Ortho Pharmaceutical Corporation. Total synthesis of (1RS,4SR,5RS)-4-(4,8-dimethyl-5-hydroxy-7-nonenyl)-4-methyl-3,8-dioxabicyclo[3.2.1] octane-1-acetic acid. 4,237,054, Cl. 260-340.600.
Cheng, Chen-Yen; Cheng, Sing-Wang; and Cheng, Wu-Cheng. Separation of an aqueous solution by the improved vacuum freezing high pressure ice melting process. 4,236,382, Cl. 62-537.000.
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Cheremisov, Ivan Y.: *See*—
Chigirinsky, Alexandr A.; Danko, Vladimir G.; Grinchenko, Nikolai G.; Cheremisov, Ivan Y.; Tretevich, Roman I.; and Penkina, Galina V., 4,237,398, Cl. 310-214.000.
Cherepok, Gennady V.: *See*—
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov,

Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.

Chesler, Ronald B.: *See—*
Dabby, Franklin W.; and Chesler, Ronald B., 4,236,905, Cl. 65-3.00A.

Chevron Research Company: *See—*
Goodrich, Judson E., 4,237,036, Cl. 260-28.00R.
King, William F.; and Wheeler, Ronald E., 4,237,121, Cl. 424-200.000.

Chiang, Alice M., to Honeywell Inc. Gallium phosphide JFET. 4,237,473, Cl. 357-61.000.

Chiang, Chih-Shu: *See—*
White, John F.; Taylor, Edward C.; and Chiang, Chih-Shu, 4,237,306, Cl. 560-105.000.

Chiba, Masakazu: *See—*
Ooshiro, Hideyuki; and Chiba, Masakazu, 4,236,753, Cl. 297-364.000.

Chietti, Giovanni, to Macchine Tessili Circolari MATEC S.p.A. Circular knitting machine for stockings or the like, having raising cams which can be moved both radially and angularly. 4,236,389, Cl. 66-42.000.

Chigirinsky, Alexandr A.; Danko, Vladimir G.; Grinchenko, Nikolai G.; Cheremisov, Ivan Y.; Tretevich, Roman I.; and Penkina, Galina V. Stator construction. 4,237,398, Cl. 310-214.000.

Chikamura, Takao; Fujiwara, Shinji; Terui, Yasuaki; and Fukai, Masakazu, to Matsushita Electric Industrial Co., Ltd. Solid-state image sensor. 4,236,829, Cl. 357-16.000.

Childs, William V., to Phillips Petroleum Company. Recovery of methyl heptafluorobutyrate from water by distillation. 4,236,975, Cl. 203-14.000.

Chisholm, Douglas B. Sign post couplings. 4,236,843, Cl. 403-2.000.

Choate, James R. Log-burning stove. 4,236,500, Cl. 126-145.000.

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Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Maehara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,237,132, Cl. 424-248.520.

Christoph, Heinz: *See—*
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.

Church & Dwight Co., Inc.: *See—*
Schoenholz, Daniel; Petersen, Arthur W.; and Northup, Marcus A., Jr., 4,236,935, Cl. 134-2.000.

Ciba-Geigy Aktiengesellschaft: *See—*
Long, William E., 4,237,281, Cl. 544-99.000.

Ciba-Geigy Corporation: *See—*
Bader, Rolf; and Reinehr, Dieter, 4,237,275, Cl. 542-417.000.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,237,286, Cl. 544-225.000.
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Mentzel, Detlef; and Frei, Hans-Rudolf, 4,237,179, Cl. 428-276.000.
Rody, Jean; and Karrer, Friedrich, 4,237,297, Cl. 546-189.000.
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,237,294, Cl. 546-20.000.

Cimarusti, Christopher M.; Koster, William H.; and Sykes, Richard B., to E. R. Squibb & Sons, Inc. 7-[2-(2-Amino-4-thiazolyl)-2-[(1-carboxy-1,1-dialkyl)alkoxyimino]acetamido]cephem sulfoxides. 4,237,128, Cl. 424-246.000.

Cincinnati Milacron Inc.: *See—*
Frecka, Thomas R., 4,237,408, Cl. 318-571.000.

Cipher Data Products Incorporated: *See—*
Barton, William M., Jr., 4,236,682, Cl. 242-198.000.

Cipriani, Tullio, to Hoonet s.a.s. di Indro Paolo Dall' & C. Apparatus for washing and drying food products. 4,236,541, Cl. 134-104.000.

Citizen Watch Company Limited: *See—*
Ebihara, Heihachiro; Sekiya, Fukuo; and Uchino, Misao, 4,237,420, Cl. 328-3.000.

Claassen, George R.: *See—*
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Clark, Becky J., to Burroughs Corporation. Speed independent selector switch for digital communication networks. 4,237,447, Cl. 340-147.00T.

Clarke-Gravely Corporation: *See—*
Block, Thomas S., 4,236,269, Cl. 15-180.000.

Classon, Ake, to ASEA Aktiebolag. High voltage insulated cable terminations. 4,237,333, Cl. 174-21.00R.

Claudius Peters Ag.: *See—*
Krauss, Werner, 4,236,852, Cl. 406-90.000.

Claus, Jon S.: *See—*
Johnston, Howard; Troxell, Lillian H.; and Claus, Jon S., 4,236,912, Cl. 71-94.000.

Claverie, Jean-Claude, to Societe Anonyme DBA. Brake shoe adjusting structure for a drum brake. 4,236,611, Cl. 188-79.50P.

Claxton, Gerald L., to Up-Right, Inc. Picking device for harvesting machines. 4,236,371, Cl. 56-330.000.

Clayton Dewandre Company Limited: *See—*
Hawker, Michael J., 4,236,762, Cl. 303-7.000.
Page, Wilbur M., 4,236,761, Cl. 303-6.00C.

Clayton, John P.: *See—*
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,237,161, Cl. 424-283.000.

Clever, Eric C., to Electronic Management Support, Inc. Surveillance system. 4,237,483, Cl. 358-108.000.

Clift, Miner E.: *See—*
Wood, Loren E.; Forsythe, Calvin C.; Strelow, John L.; Short, Edward H., III; Allen, Jerome D.; and Clift, Miner E., 4,236,648, Cl. 220-89.00A.

Cline, Jay D., to Dayton-Granger, Inc. Lightning diverter strip. 4,237,514, Cl. 361-117.000.

Clint, John H.: *See—*
Rudkin, Arthur L.; Clint, John H.; and Young, Kenneth, 4,237,016, Cl. 252-8.800.

Cloutier, Denis L.; and Cloutier, Fernand. Stake for truck bed, trailer or truck structure. 4,236,748, Cl. 296-43.000.

Cloutier, Fernand: *See—*
Cloutier, Denis L.; and Cloutier, Fernand, 4,236,748, Cl. 296-43.000.

Cloutier, Oscar H.: *See—*
Gorsche, Robert D.; and Cloutier, Oscar H., 4,236,327, Cl. 36-14.000.

Cluett, Peabody & Co., Inc.: *See—*
Rockerath, John L.; and Schreck, Harold J., 4,236,472, Cl. 112-304.000.

Cobe Laboratories, Inc.: *See—*
Lobdell, Donn D.; Herman, Stephen J.; and Anderson, Robert L., 4,237,091, Cl. 422-46.000.

Cochran, Gary L.; Wilson, Charles D.; and Klee, Maurice, to J. I. Case Company. Fluid pump control system for a tractor. 4,236,422, Cl. 74-470.000.

Cohen, Joseph; and Adjemian, Alain, to Aluminum Pechiney. Process for obtaining pure alumina by the hydrochloric attack of aluminous ores and extraction of the impurities by means of a sulphuric treatment. 4,237,102, Cl. 423-126.000.

Cohen, Stanley N.; and Boyer, Herbert W., to Leland Stanford Jr. University, Board of Trustees of the. Process for producing biologically functional molecular chimeras. 4,237,224, Cl. 435-68.000.

Cohn, Robert: *See—*
Gingerich, David L.; and Cohn, Robert, 4,236,482, Cl. 118-642.000.

Cole, Elsa D.: *See—*
Kerr, Barbara P., 4,236,508, Cl. 126-451.000.

Cole, Raymond C.: *See—*
Williams, Harvey F.; Cole, Raymond C.; and Donaghy, James G., 4,236,257, Cl. 2-406.000.

Colla, Jeannine O.; and Thoma, Paul E., to Johnson Controls Inc. Method of making a nitrogen dioxide sensing element. 4,236,307, Cl. 29-857.000.

Collen, Heinrich, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile rail welding machine. 4,236,453, Cl. 104-15.000.

Colman, Derek A.; and Thew, Martin T., to National Research Development Corporation. Cyclone separator. 4,237,006, Cl. 210-84.000.

Colonneau, Jean. Display device. 4,236,335, Cl. 40-442.000.

Colorguard Corporation: *See—*
Ingraham, Glen E., 4,237,186, Cl. 428-379.000.

Columbus McKinnon Corporation: *See—*
Schreyer, Kenneth D.; Leverentz, Earl T.; and Nusz, Thomas R., 4,236,456, Cl. 105-154.000.

Combustion Engineering, Inc.: *See—*
Prible, Glen V., 4,237,103, Cl. 423-207.000.

Comizzoli, Robert B.: *See—*
Deckert, Cheryl A.; Comizzoli, Robert B.; and Schnable, George L., 4,237,379, Cl. 250-302.000.

Commissariat a l'Energie Atomique: *See—*
Delvalle, Pierre, 4,237,100, Cl. 423-6.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel S.A.: *See—*
Deglin, Rene'; and Reymond, Gilbert, 4,237,545, Cl. 364-900.000.

Compagnie Internationale pour l'Informatique: *See—*
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,301, Cl. 29-740.000.
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,306, Cl. 29-827.000.

Compte, Jean, to Campenon-Bernard Cetra. Railing for building works and the like. 4,236,698, Cl. 256-23.000.

ComSonics, Inc.: *See—*
Shimp, Richard L., 4,237,486, Cl. 358-142.000.

Condar, Co.: *See—*
Kreith, Frank; and Cornelison, Richard C., 4,236,578, Cl. 165-181.000.

Conduit-Amherst Limited: *See—*
Marquardt, Mark O., 4,236,557, Cl. 144-315.00R.

Conoco, Inc.: *See—*
Reed, Philip W.; and Alexander, John D., 4,236,406, Cl. 73-61.10R.

Contra-Shear Holdings Limited: *See—*
Burgess, George; and Pitches, Ernest W., 4,236,999, Cl. 209-250.000.

Control Data Corporation: *See—*
Hennenfent, Douglas J.; Johnson, Robert A.; and Holmstrand, Allan L., 4,236,355, Cl. 51-168.000.

Cooper, David A.; Monoski, William T.; and Vibert, Edward J., to GTE Products Corporation. Ground fault receptacle re-set guide assembly. 4,237,435, Cl. 335-18.000.

Cooper, Edward W.: *See—*
Moore, David C.; Cooper, Edward W.; and Porteous, Archibald, 4,236,770, Cl. 312-184.000.

Cope, Geoffrey W., to Dresser Industries, Inc. Steerable railway truck adapter pad centering means. 4,236,457, Cl. 105-218.00R.

Corbach, Rainer: *See*—
Mohr, Adolf; and Corbach, Rainer, 4,237,397, Cl. 310-154.000.

Cordova, James, to Burtis, Eric F. Visual display with illuminable elements arranged in vertically aligned sections. 4,237,459, Cl. 340-756.000.

Cormier, Raymond G.: *See*—
Davis, Austin E.; Cormier, Raymond G.; Lutz, Leo O.; Pauk, Henry T.; and Lones, Harry E., 4,236,483, Cl. 118-647.000.

Cornelison, Floyd S., Jr. Impellers and apparatus for use therewith. 4,236,504, Cl. 126-247.000.

Cornelison, Richard C.: *See*—
Kreith, Frank; and Cornelison, Richard C., 4,236,578, Cl. 165-181.000.

Corning Glass Works: *See*—
Keck, Donald B., 4,236,786, Cl. 350-96.150.

Correll, Jerome B., to A. C. Engines, Inc. Internal combustion engine. 4,236,490, Cl. 123-32.00B.

Corry, Stuart E., to Geolograph Company, The. Drilling rig load indicator. 4,236,408, Cl. 73-151.000.

Cort, Joseph H.; Barth, Tomislav; Jost, Karel; and Veznik, Zdenek, to Ceskoslovenska akademie ved. Long-acting oxytocin analogs for use in inducing and accelerating labor in mammals, particularly farm animals. 4,237,119, Cl. 424-177.000.

Costa, Eugenio. Electronic automatic timing device for photographic enlargements or reproductions by projection or contact. 4,236,816, Cl. 355-68.000.

Coulter Systems Corporation: *See*—
Kuehnle, Manfred R., 4,236,807, Cl. 355-3.00R.
Kuehnle, Manfred R., 4,236,812, Cl. 355-14.00E.

Courtesy Mold and Tool Corporation: *See*—
Kreiseder, Walter J., 4,236,280, Cl. 24-16.0PB.

Couture, Raymond; and Couture, Raynald. Safety control system for the boom of a crane. 4,236,864, Cl. 414-699.000.

Couture, Raynald: *See*—
Couture, Raymond; and Couture, Raynald, 4,236,864, Cl. 414-699.000.

Couwenberg, Winston D., to U.S. Philips Corporation. Low-pressure mercury vapor discharge lamp. 4,237,401, Cl. 313-225.000.

Coyne, Roy J.: *See*—
Lombardi, Louis J.; and Coyne, Roy J., 4,237,185, Cl. 428-337.000.

Cragoe, Edward J., Jr.; and Hoffman, William F., to Merck & Co., Inc. 2,3-Dihydro-6,7-disubstituted-5-(substituted sulfonyl)benzofuran-2-carboxylic acids. 4,237,130, Cl. 424-248.500.

Cragoe, Edward J., Jr.; and Hoffman, William F., to Merck & Co., Inc. 2,3-Dihydro-2,6,7-trisubstituted-5-acylbenzofurans. 4,237,144, Cl. 424-270.000.

Cramm, Herman W.: *See*—
Shishido, Isuneo; Cramm, Herman W.; and Vick, William L., 4,237,431, Cl. 333-106.000.

Crandall, Alan L.: *See*—
Manley, Claude E.; Pennella, John J.; Deaton, Donald J.; Crandall, Alan L.; and Hersey, James P., 4,236,546, Cl. 137-88.000.

Crane, Wendy S.: *See*—
Wendt, Gary R., 4,236,259, Cl. 4-172.120.

Crawford, Wheeler C.: *See*—
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., 4,237,070, Cl. 260-580.000.

Crosfield Electronics, Ltd.: *See*—
Aughton, John E., 4,237,481, Cl. 358-80.000.

Cross, Robin C.: *See*—
Bunting, John G.; Cross, Robin C.; Guard, David R.; Groves, Ian S.; Johnson, Edward G. T.; and Stevens, Alan E., 4,237,339, Cl. 179-1.0CN.

Crossman, Richard L., to Goodyear Aerospace Corporation. Tire pressure communication devices. 4,237,445, Cl. 340-58.000.

Crowley, Daniel J.; and Stine, Jon D., to AMP Incorporated. Low insertion force card reader. 4,236,667, Cl. 235-443.000.

Csanyi, Endre: *See*—
Horvath, Tibor; Csanyi, Endre; Eckhardt, Sandor; and Kiraly nee Vida, Emilia, 4,237,273, Cl. 536-53.000.

Cukier, Maurice, to International Business Machines Corporation. Programmable logic arrays. 4,237,542, Cl. 364-900.000.

Cunningham, James C. Fishing rod indicator assembly. 4,236,340, Cl. 43-17.000.

Cuomo, Jerome J.: *See*—
Aboaf, Joseph A.; Cuomo, Jerome J.; Gangulee, Amitava; and Kobliska, Robert J., 4,236,946, Cl. 148-108.000.

Curchod, Donald B.; and Borner, Wilhelm, to Nortron Corporation. Sensor assembly for wheel alignment system. 4,236,315, Cl. 33-203.180.

Curtis-Dyna Products Corporation: *See*—
Curtis, Russell R., 4,236,877, Cl. 417-265.000.

Curtis, Russell R., to Curtis-Dyna Products Corporation. Highly accurate low volume metering pump. 4,236,877, Cl. 417-265.000.

Cuthbertson, Eric, to Sterling Drug Inc. 2,4,5-Trichlorophenol process. 4,237,321, Cl. 568-776.000.

Cutler, John H.; and Walker, Loren H., to General Electric Company. Controlled current inverter system having semiconductor overvoltage protection. 4,237,531, Cl. 363-58.000.

Cyprus Metallurgical Processes Corporation: *See*—
Narain, Kartik A., 4,236,918, Cl. 75-101.00R.

Dabby, Franklin W.; and Chesler, Ronald B., to Times Fiber Communications, Inc. Method for continuously monitoring the composition of glass particulate during the production of optical fiber. 4,236,905, Cl. 65-3.00A.

Dahlberg, Lois A., to PPG Industries, Inc. Electrolytic cell. 4,236,989, Cl. 204-252.000.

Dahm, Franz-Ludwig: *See*—
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Schreyer, Gerd, 4,237,299, Cl. 546-250.000.

Dahmen, Kurt: *See*—
Kuster, Erich; Goossens, Bernhard; Barthell, Eduard; and Dahmen, Kurt, 4,237,067, Cl. 260-561.00N.

Dai-Ich Seiko Co., Ltd.: *See*—
Iwabuchi, Kiyoshi, 4,236,565, Cl. 152-427.000.

Dai Nippon Insatu Kabushiki Kaisha: *See*—
Inoue, Eiichi; Takeda, Misturu; and Shimada, Fumio, 4,237,212, Cl. 430-346.000.

Daig Corporation: *See*—
Little, Richard L., 4,236,529, Cl. 128-785.000.

Daimler-Benz Aktiengesellschaft: *See*—
Buhl, Horst; and Gutjahr, Manfred, 4,236,927, Cl. 75-246.000.
Resch, Reinhard, 4,236,763, Cl. 303-54.000.

Dainippon Pharmaceutical Co., Ltd.: *See*—
Uno, Hitoshi; Nagai, Yasutaka; Karasawa, Tadahiko; and Furukawa, Kiyoshi, 4,237,135, Cl. 424-250.000.

Daiwa Kasei Kabushiki Kaisha: *See*—
Iida, Takao; Ozaki, Sho; and Kotaka, Toshihiko, 4,237,230, Cl. 435-207.000.

Dammann, Peter; and Frank, Benno, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Heating apparatus for false twist yarn crimping machine. 4,236,323, Cl. 34-152.000.

Dang, Tuan-Phat: *See*—
Aviron-Violet, Paul; and Dang, Tuan-Phat, 4,237,072, Cl. 260-601.00R.

Danielle, Louis: *See*—
Iacono, Frederick D.; and Danielle, Louis, 4,236,787, Cl. 350-96.210.

Danilewicz, John C.: *See*—
Campbell, Simon F.; Danilewicz, John C.; and Greengrass, Colin W., 4,237,138, Cl. 424-251.000.

Danko, Vladimir G.: *See*—
Chigirinsky, Alexandr A.; Danko, Vladimir G.; Grinchenko, Nikolai G.; Cheremisov, Ivan Y.; Tretevich, Roman I.; and Penkina, Galina V., 4,237,398, Cl. 310-214.000.

Darby, Malcolm O.: *See*—
Raybon, James C., Jr.; Darby, Malcolm O.; and Derrick, Thomas V., Jr., 4,237,187, Cl. 428-399.000.

Dart Industries Inc.: *See*—
Valayil, Silvester P.; and Elias, Moenes L., 4,236,957, Cl. 156-666.000.

Dartmouth College, Trustees of: *See*—
Grethlein, Hans E., 4,237,226, Cl. 435-99.000.

Daub, Arthur R. Locking assembly for article of jewelry. 4,236,384, Cl. 63-7.000.

Dauth, Christoph: *See*—
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, 4,237,291, Cl. 544-346.000.

David Brown Gear Industries Limited: *See*—
Whateley, Eric A., 4,236,617, Cl. 192-3.300.

Davidson, Ralph: *See*—
Roth, Irving; and Davidson, Ralph, 4,237,492, Cl. 358-225.000.

Davis, Austin E.; Cormier, Raymond G.; Lutz, Leo O.; Pauk, Henry T.; and Lones, Harry E., to Nashua Corporation. Metering roll with fixed sliders. 4,236,483, Cl. 118-647.000.

Davis, Bryan T.; and Retzloff, James B., to Ethyl Corporation. Friction modifier for gasoline. 4,236,898, Cl. 44-66.000.

Davis, Forrest W., to Berkleonics, Inc. Power supply for fluorescent lamp. 4,237,403, Cl. 315-98.000.

Davis, Grover M. Retractable streamlining device for vehicles. 4,236,745, Cl. 296-1.00S.

Davis, William L., Jr., to Hicap Engineering & Development Corporation. Apparatus for wet-post treatment of metallized iron ore. 4,236,699, Cl. 266-114.000.

Dayton-Granger, Inc.: *See*—
Cline, Jay D., 4,237,514, Cl. 361-117.000.

De La Rue Giori S.A.: *See*—
Bonomi, Antonio, 4,236,450, Cl. 101-425.000.

Deaton, Donald J.: *See*—
Manley, Claude E.; Pennella, John J.; Deaton, Donald J.; Crandall, Alan L.; and Hersey, James P., 4,236,546, Cl. 137-88.000.

de Bucs, Eugen S.: *See*—
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.

Deckert, Cheryl A.; Comizzoli, Robert B.; and Schnable, George L., to RCA Corporation. Method for inspecting electrical devices. 4,237,379, Cl. 250-302.000.

de Clara, Maximilian, to TKR Tabak Forschnugs-GmbH & Co. Novel cigarette process and product produced therefrom. 4,236,533, Cl. 131-17.00R.

Decoene, Frans J. G. C., to Sperry Corporation. Row crop attachment. 4,236,369, Cl. 56-60.000.

Deere & Company: *See*—
Isachsen, Henning, 4,236,584, Cl. 172-385.000.
Lysenko, George P., 4,236,759, Cl. 303-6.00A.

Deffeyes, Robert J., to Deffeyes, Robert J. Polymodal magnetic recording media process for making and verifying the same and compositions useful therein. 4,237,189, Cl. 428-457.000.

Degger, Wolter W. J.: *See*—
Franken, Adrianus J. J.; and Degger, Wolter W. J., 4,237,480, Cl. 358-55.000.
Deglin, Rene'; and Reymond, Gilbert, to Compagnie Industrielle des Telecommunications Cit-Alcatel S.A. Programmable sequential logic. 4,237,545, Cl. 364-900.000.
DeGuiseppi, David T.; and Kolakowski, Richard A., to Upjohn Company, The. Polyisocyanurate foams based on esterified DMI oxidation residue additive. 4,237,238, Cl. 521-131.000.
de Jong, Aaldert J.: *See*—
Mulder, Albertus J.; and de Jong, Aaldert J., 4,237,322, Cl. 568-820.000.
Delorme, Raymond: *See*—
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,301, Cl. 29-740.000.
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,306, Cl. 29-827.000.
De Luca, Paul V.; and Fasano, Michael C., to Porta Systems Corp. Bridge lifter module. 4,237,346, Cl. 179-35.000.
Delvalle, Pierre, to Commissariat a l'Energie Atomique. Isotopic enrichment of uranium with respect to an isotope. 4,237,100, Cl. 423-6.000.
Demarthe, Jean-Michel; Gandon, Louis; and Goujet, Monique, to Societe Metallurgique le Nichel-S.L.N. Hydrometallurgical process for treating nickel mattes. 4,236,981, Cl. 204-113.000.
De Mesmaeker, Ivan; and De Mesmaeker, Ivan, to BBC Brown, Boveri & Co Ltd; and BBC Brown, Boveri & Co Ltd. Selective protection process for electrical lines and device for carrying out the process. 4,237,511, Cl. 361-80.000.
De Mesmaeker, Ivan: *See*—
De Mesmaeker, Ivan; and De Mesmaeker, Ivan, 4,237,511, Cl. 361-80.000.
Demetron Gesellschaft fur Elektronik Werkstoffe mbH: *See*—
Seibold, Klaus; and Schlamp, Gunther, 4,236,948, Cl. 148-188.000.
DeMonbrun, James R.; Schmitt, Charles R.; and Schreyer, James M., to United States of America, Energy. Method for inhibiting corrosion in aqueous systems. 4,237,090, Cl. 422-13.000.
De Niet, Edmond, to U.S. Philips Corporation. Device for coding/decoding data for a medium. 4,237,496, Cl. 360-40.000.
Denk, Hans; and Habrich, Reiner, to Siemens Aktiengesellschaft. Method of manufacturing molded and impregnated parts. 4,237,149, Cl. 427-58.000.
Denker, Jerry B., to R. L. Drake Company. Housing for electronic assembly including internally mounted heat sink. 4,237,521, Cl. 361-384.000.
Denkyi Kagaku Kogyo Kabushiki Kaisha: *See*—
Ito, Higashi; and Watanabe, Seiichi, 4,237,074, Cl. 260-654.00R.
Denner, Peter: *See*—
Joekel, Alfred; Langen, Hans; and Denner, Peter, 4,236,299, Cl. 29-727.000.
de Nora, Oronzio; Giuffre, Luigi; and Modica, Giovanni, to Oronzio de Nora Impianti Elettrochimici S.p.A. Composite diaphragms and process for electrolyzing alkali metal chloride. 4,236,979, Cl. 204-98.000.
DePenti, Kenneth L., to Midland-Ross Corporation. Wearplate for the butt end of a coupler shank. 4,236,644, Cl. 213-62.00R.
DePenti, Kenneth L., to Midland-Ross Corporation. Wearplate for a coupler shank pinhole. 4,236,645, Cl. 213-69.000.
Derrick, Thomas V., Jr.: *See*—
Raybon, James C., Jr.; Darby, Malcolm O.; and Derrick, Thomas V., Jr., 4,237,187, Cl. 428-399.000.
Desai, Nitin V.; and Poliniak, Eugene S., to RCA Corporation. Silane electron beam resists. 4,237,208, Cl. 430-270.000.
De Servi, Sergio: *See*—
Cantalupo, Giuseppe; De Servi, Sergio; and Lepori, Agostino, 4,237,258, Cl. 526-273.000.
Dessen, Erik: *See*—
Wallevik, Oddmund; and Dessen, Erik, 4,237,111, Cl. 423-632.000.
Deter, Arthur R. Illuminated jewelry. 4,237,525, Cl. 362-104.000.
Deuse, Karl-Heinz; and Drobka, Witold, to Borsig GmbH. Heat exchangers with tube bundles. 4,236,576, Cl. 165-134.00R.
Deutsch Fastener Corp.: *See*—
Molina, Jorge W., 4,236,562, Cl. 151-69.000.
Deutsche Automobilgesellschaft mbH: *See*—
Gutmann, Gunter; Kistrup, Holger; Bauchk, Friedrich G. K.; and M/ler, Gerd, 4,237,196, Cl. 429-50.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Schreyer, Gerd, 4,237,299, Cl. 546-250.000.
Deutsche Texaco Aktiengesellschaft: *See*—
Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, 4,237,325, Cl. 568-896.000.
Devendorf, Don C.; and Baskevitch, Eugene, to Hughes Aircraft Company. High speed latching comparator. 4,237,387, Cl. 307-203.000.
DeVoille, Maurice: *See*—
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,301, Cl. 29-740.000.
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,306, Cl. 29-827.000.
Dewey, George G., to Illinois Tool Works Inc. Stand-up screwgun. 4,236,555, Cl. 144-32.000.
Diaz, Raul, to Norlin Industries, Inc. Electronic apparatus cabinet assembly. 4,236,774, Cl. 312-351.000.
Diaz, Stephen H.: *See*—
Horsma, David A.; and Diaz, Stephen H., 4,236,949, Cl. 156-49.000.
Dick, George H.; and Smith, John A., to A. B. Dick Company. Hammer support for rotary printing apparatus. 4,236,842, Cl. 400-144.200.
Dieterich, Dieter, to Bayer Aktiengesellschaft. Polyurethanes containing aryl sulfonic acid alkyl ester groups. 4,237,250, Cl. 525-440.000.
Dietrich, Ralph N.; Robinson, John W.; and Howell, Stephen L., to Kimball International, Inc. Electronic music synthesizer. 4,236,436, Cl. 84-1.260.
Disco Engineering, Inc.: *See*—
Henson, Artel R., 4,236,772, Cl. 312-242.000.
Dishal, Milton, to International Telephone and Telegraph Corporation. Automatic modulation system. 4,237,555, Cl. 455-108.000.
Diversified Plastics Products Inc.: *See*—
McCaffrey, James A., 4,236,273, Cl. 16-150.000.
Dixon, George, to Binks Bullows Limited. Spray nozzle. 4,236,674, Cl. 239-296.000.
Djurner, Jan K.: *See*—
Kubat, Josef; and Djurner, Jan K., 4,237,089, Cl. 264-328.000.
Dr. E. Fresenius Chemisch Pharmazeutische Industrie KG Apparatebau KG: *See*—
Schindler, Johannes G.; and Schael, Wilfried, 4,236,987, Cl. 204-195.00M.
Dr. Molter GmbH: *See*—
Aeschlimann, Hans-Peter; Schmidhuber, Volker; and Kappes, Werner, 4,236,666, Cl. 233-26.000.
Dolch, Gernot. Blind rivet. 4,236,429, Cl. 85-72.000.
Dolling, Ulf H., to Merck & Co., Inc. Preparation of 5(halophenyl)salicylic acid compounds. 4,237,315, Cl. 562-469.000.
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V. Method of gas-dynamic stirring of liquid molten metals and apparatus for performing same. 4,236,917, Cl. 75-93.00R.
Domo, John M., to Beller, Melchior P. Medical history card. 4,236,332, Cl. 40-2.200.
Donaghy, James G.: *See*—
Williams, Harvey F.; Cole, Raymond C.; and Donaghy, James G., 4,236,257, Cl. 2-406.000.
Dorling, Rolf; and Hemshemeier, Hans, to L. & C. Steinmuller GmbH. High-temperature gas exit from a pre-stressed pressure container. 4,236,573, Cl. 165-54.000.
Dorsch, Peter: *See*—
Michl, Rudy; and Dorsch, Peter, 4,236,922, Cl. 75-134.00D.
dos Santos, Jose P. Method and apparatus for generating linear electromagnetic travelling fields for driving and increasing the adhesive load of railway motored vehicles. 4,236,455, Cl. 104-148.0LM.
Dotter, Berton E., to TRW Inc. Transformer with integral reed contact. 4,237,345, Cl. 179-16.00E.
Dougherty, Robert S., to RCA Corporation. Aqueous photoresist method. 4,237,210, Cl. 430-318.000.
Dougier, Patrick; Fouassier, Claude; and Latourrette, Bertrand, to Rhone-Poulenc Industries. Novel black light emitting luminophors. 4,237,027, Cl. 252-301.40H.
Douglas, Melvin O., Jr. Two-player pivoted rod ball drop game. 4,236,716, Cl. 273-110.000.
Dow Chemical Company, The: *See*—
Britton, Thomas C.; and Trepanier, Donald L., 4,237,049, Cl. 260-239.0BD.
Dowd, William; Krauss, Richard C.; and Freiter, Edward R., 4,237,304, Cl. 548-239.000.
Forster, Allen V.; Martz, Lyle E.; and Leng, Douglas E., 4,237,110, Cl. 423-488.000.
Gatling, Sterling C., 4,237,303, Cl. 548-235.000.
Johnston, Howard; Troxell, Lillian H.; and Claus, Jon S., 4,236,912, Cl. 71-94.000.
Raines, Dale A.; and Ainsworth, Oliver C., 4,237,324, Cl. 568-858.000.
Reifschneider, Walter, 4,237,168, Cl. 424-326.000.
Robbins, Lanny A., 4,236,973, Cl. 203-10.000.
Dowd, William; Krauss, Richard C.; and Freiter, Edward R., to Dow Chemical Company, The. Oxazolinium salts and method of preparation. 4,237,304, Cl. 548-239.000.
Dresser Industries, Inc.: *See*—
Baron, George B., 4,236,863, Cl. 414-687.000.
Cope, Geoffrey W., 4,236,457, Cl. 105-218.00R.
McGuire, Robert C., 4,236,402, Cl. 73-12.000.
Drobka, Witold: *See*—
Deuse, Karl-Heinz; and Drobka, Witold, 4,236,576, Cl. 165-134.00R.
Drummond, James E.: *See*—
Fitch, Richard A.; Drummond, James E.; and Mondelli, Alfred A., 4,236,900, Cl. 55-138.000.
Dubs, Paul; and Kuntzel, Heiner, to Givaudan Corporation. Process for making asymmetrical disulfides. 4,237,290, Cl. 544-335.000.
Duce, Benjamin R.: *See*—
Boyes, Robert N.; Duce, Benjamin R.; Smith, Emil R.; and Byrnes, Eugene W., 4,237,068, Cl. 260-562.00N.
Dudek, Edward R.: *See*—
Eller, Harry J.; Eller, Donald G.; Dudek, Edward R.; and Goodwin, Edward C., 4,237,342, Cl. 179-1.0PC.
Dudzinski, John R., to Du Pont de Nemours, E. I., and Company. Analgesic mixture of nalbuphine and acetaminophen. 4,237,140, Cl. 424-260.000.
Dugdale, Ronald A., to United Kingdom Atomic Energy Authority. Apparatus for depositing materials on substrates. 4,236,994, Cl. 204-298.000.

Duhault, Jacques, to Science Union et Cie. Treatment of carbohydrate metabolism disorders. 4,237,165, Cl. 424-308.000.

Duill, Helmut: *See—*
Ansen, Jakob; Hoppen, Heinz; and Duill, Helmut, 4,236,886, Cl. 432-14.000.

DuLac, Steven M. Toy space gun. 4,236,348, Cl. 46-228.000.

Dunn, Bruce S.; and Evenden, Theodore M., to General Electric Company. Thermocompression methods of forming sodium-sulfur cell casings. 4,236,661, Cl. 228-184.000.

Du Pont de Nemours, E. I., and Company: *See—*
Dudzinski, John R., 4,237,140, Cl. 424-260.000.
Piovoso, Michael J.; Smith, Edmund H., Jr.; and Wolf, William E., 4,237,539, Cl. 364-552.000.

Duron, Ola; Griffin, Richard J., deceased; and by United Bank of Denver, N. A., personal representative, to Whale Scientific, Inc. Separation and quantitation of coproporphyrins and uroporphyrins. 4,236,892, Cl. 23-230.00B.

Duthie, Anthony J.: *See—*
Hirst, Peter B.; and Duthie, Anthony J., 4,236,871, Cl. 416-186.00R.

Dwinell, Davis B., to American Flange & Manufacturing Co. Inc. Nestable pouring spout assembly. 4,236,629, Cl. 222-529.000.

Dymov, Gershon D.: *See—*
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.

Dynamex Corporation: *See—*
Bravin, Ben, 4,236,373, Cl. 57-71.000.

E-Comm Australia Pty. Ltd.: *See—*
Instance, Michael M., 4,237,386, Cl. 307-116.000.

E. D. Bullard Company: *See—*
Moretti, Anthony L., 4,236,514, Cl. 128-201.230.

E. R. Squibb & Sons, Inc.: *See—*
Cimarusti, Christopher M.; Koster, William H.; and Sykes, Richard B., 4,237,128, Cl. 424-246.000.
Ondetti, Miguel A., 4,237,129, Cl. 424-246.000.
Ondetti, Miguel A., 4,237,134, Cl. 424-248.520.

Eapen, Kuttikandathil E.: *See—*
Kahn, Marvin L.; and Eapen, Kuttikandathil E., 4,237,146, Cl. 426-330.000.

Easley, John K., to General Electric Company. Method and apparatus for measuring conductivity in electrical feedthrough. 4,237,415, Cl. 324-54.000.

Eastman Kodak Company: *See—*
Sylvester, Robert A., 4,236,798, Cl. 354-181.000.
Upson, Donald A.; and Steklenski, David J., 4,237,194, Cl. 428-922.000.

Ebauches S.A.: *See—*
Fellrath, Jean; Perotto, Jean-Felix; Schneiter, Ali; and Grimm, Maurice, 4,237,548, Cl. 368-69.000.
Huguenin, Freddy, 4,237,460, Cl. 340-756.000.

Eberlein, Dietmar: *See—*
Tusso, Robert J.; Feher, Peter; Schultes, Max; and Eberlein, Dietmar, 4,236,808, Cl. 355-8.000.

Ebihara, Heihachiro; Sekiya, Fukuo; and Uchino, Misao, to Citizen Watch Company Limited. Temperature sensing circuit. 4,237,420, Cl. 328-3.000.

Eby, Richard L.; and Wilson, Lester E., to Anderson Power Products, Inc. Electrical device with bi-level battery state-of-charge indicator. 4,237,198, Cl. 429-93.000.

Eckhardt, Sandor: *See—*
Horvath, Tibor; Csanyi, Endre; Eckhardt, Sandor; and Kiraly nee Vida, Emilia, 4,237,273, Cl. 536-53.000.

Ecodyne Corporation: *See—*
Pfleger, Robert K., 4,236,881, Cl. 417-502.000.

Ecolaire Incorporated: *See—*
Raseley, LeRoy J.; Forster, Leslie L.; and Hay, Edward F., 4,236,575, Cl. 165-113.000.

Edinger, Gerald: *See—*
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.

Edwards, Frederick H., to Vinyl Clad Proprietary Limited. Label applicator. 4,236,954, Cl. 156-352.000.

Edwards, Richard A., to Esselte Pendaflex Corporation. Transport mechanism for stationary encoders. 4,236,659, Cl. 226-58.000.

Edwin Cooper, Inc.: *See—*
Papay, Andrew G.; and O'Brien, Joseph P., 4,237,020, Cl. 252-47.500.

Eggert, Winfried: *See—*
Schmid, Jurgen; and Eggert, Winfried, 4,236,413, Cl. 73-821.000.

Eguchi, Yasukata, to Janome Sewing Machine Co. Ltd. Electronic sewing machine with back stitching system. 4,236,468, Cl. 112-158.00E.

Eguchi, Yasukata: *See—*
Tanaka, Yoshikazu; and Eguchi, Yasukata, 4,236,467, Cl. 112-158.00F.

Ehlers, Eugene J. Pillow for recliner chair. 4,236,754, Cl. 297-423.000.

Ehrat, Rodolphe, to Biological Chemical Activities Patents SA B.C.A.P. Process for the preparation of N-phosphonomethyl glycine. 4,237,065, Cl. 260-502.500.

Eidenschink, Rudolf; Krause, Joachim; and Pohl, Ludwig, to Merck Patent Gesellschaft mit beschrankter Haftung. Liquid crystalline carboxylic acid esters. 4,237,026, Cl. 252-299.000.

Eigenmann, Ludwig. Road marking machine and method. 4,236,950, Cl. 156-71.000.

Ekholm, Pertti: *See—*
Suovaniemi, Osmo A.; Ekholm, Pertti; and Kaukanen, Esko, 4,237,094, Cl. 422-100.000.

Electric Power Research Institute, Inc.: *See—*
Winkleblack, Robert K., 4,236,971, Cl. 176-87.000.

Electrochemische Energieconversie N.V.: *See—*
Alfenaar, Marinus, 4,237,195, Cl. 429-44.000.

Electronic Management Support, Inc.: *See—*
Clever, Eric C., 4,237,483, Cl. 358-108.000.

Elf Union: *See—*
Fitoussi, Fredj; and Maldonado, Paul, 4,237,052, Cl. 260-28.5AS.

Elgin Sweeper Company: *See—*
Hildebrand, Donald L.; and Prescott, Ernest F., 4,236,756, Cl. 298-11.000.

Eli Lilly and Company: *See—*
Fisher, Jack W., 4,237,279, Cl. 544-16.000.
Hamill, Robert L., 4,237,225, Cl. 435-75.000.

Elias, Moenes L.: *See—*
Valayil, Silvester P.; and Elias, Moenes L., 4,236,957, Cl. 156-666.000.

Eliassen, John D.; Lee, Gim F., Jr.; and Watson, James, Jr., to General Electric Company. Process for catalyst removal from polyphenylene ether reaction solutions. 4,237,265, Cl. 528-496.000.

Eller, Donald G.: *See—*
Eller, Harry J.; Eller, Donald G.; Dudek, Edward R.; and Goodwin, Edward C., 4,237,342, Cl. 179-1.0PC.

Eller, Harry J.; Eller, Donald G.; Dudek, Edward R.; and Goodwin, Edward C. Telephone hook-up box. 4,237,342, Cl. 179-1.0PC.

Elliott Brothers (London) Limited: *See—*
Houldsworth, John, 4,237,457, Cl. 340-728.000.

Elliott, Richard D., to Skuttle Mfg. Co. Humidifier assemblies. 4,237,080, Cl. 261-80.000.

Elmapa N.V.: *See—*
Ullmann, Werner, 4,237,370, Cl. 219-69.00P.

El-Sayed, Refaat M. Process for biological purification of liquid wastes. 4,237,003, Cl. 210-11.000.

Elwing, Assar: *See—*
Larsson, Arnold; and Elwing, Assar, 4,236,364, Cl. 52-383.000.

Emary, Robert J.: *See—*
Gilford, Saul R.; Emary, Robert J.; and Carey, Glen A., 4,236,825, Cl. 356-414.000.

Emerson Electric Co.: *See—*
Foster, Gary H.; and Lombard, Marco H., 4,236,312, Cl. 30-276.000.
Lambros, William S.; and Metzger, James I., Jr., 4,237,365, Cl. 219-139.000.
Mitchell, Albert W., 4,236,311, Cl. 30-276.000.

Emery Industries, Inc.: *See—*
White, John F.; Taylor, Edward C.; and Chiang, Chih-Shu, 4,237,306, Cl. 560-105.000.

Emhart Industries, Inc.: *See—*
Surko, Walter E., Jr.; and Hart, LeRoy, 4,236,396, Cl. 70-107.000.

Emkay Manufacturing Company: *See—*
Kaplan, Alan, 4,236,487, Cl. 118-723.000.

Emme, Harry W., to Hunt, Clifton T., Jr., a part interest. Method and means for disposing of animal waste. 4,236,741, Cl. 294-1.0BB.

Emsperger, Werner: *See—*
Werker, Ekke; and Emsperger, Werner, 4,236,968, Cl. 176-38.000.

Enders, George E.: *See—*
Turk, Leonard G.; and Enders, George E., 4,236,883, Cl. 425-32.000.

Endo, Ichiro; Kobayashi, Hajime; Yano, Yasuhiro; and Muramatsu, Takao, to Canon Kabushiki Kaisha. Image forming method. 4,237,213, Cl. 430-353.000.

Endo, Masami: *See—*
Kawakami, Hideo; Endo, Masami; and Yamazaki, Fumio, 4,236,432, Cl. 83-848.000.

Endress u. Hauser GmbH u. Co.: *See—*
Schmidt, Klaus; and Grass, Klaus, 4,236,314, Cl. 33-126.600.

Enelow, Michael R.; Levy, Michael; and Porter, William P., to M.R.E. Enterprises, Inc. System for indicating and controlling dispensing of beverages. 4,237,536, Cl. 364-465.000.

Energy Development Associates, Inc.: *See—*
Hart, Thomas G., 4,237,197, Cl. 429-81.000.

Engel, Christopher M.; Srivastava, Gopal K.; and Tzakis, George J., to Zenith Radio Corporation. I.C. chroma injection and demodulation system. 4,237,478, Cl. 358-23.000.

Engelhardt, Friedrich: *See—*
Balzer, Juliane; Engelhardt, Friedrich; Ribka, Joachim; and Schidlo, Wolfram, 4,237,249, Cl. 525-369.000.
Quack, Jochen M.; Reng, Alwin; Balzer, Juliane; Engelhardt, Friedrich; and Ribka, Joachim, 4,237,243, Cl. 525-154.000.

Engl, Robert; and Richter, Hans, to Meggle Milchindustrie GmbH & Co. Compositions containing thiocyanic acid and hexamethylene-tetramine production process. 4,237,283, Cl. 544-186.000.

Enomoto, Hiroshi: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Maehara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,237,132, Cl. 424-248.520.

Environmental Chemicals, Inc.: *See—*
Cardarelli, Nathan F., 4,237,114, Cl. 424-78.000.

Epstein, David; and Bugg, John, to White Sea & Baltic Company Limited, The. Foundry processes and compositions. 4,236,569, Cl. 164-43.000.

Erich Ruhl Chemische Fabrik und Chemikalien-Grosshandel, Firma: *See—*
Newitzki, Berthold, 4,237,236, Cl. 521-123.000.
Erickson, Alfred C.; and Erickson, Clyde W. Regenerative electric motor. 4,237,410, Cl. 320-14.000.
Erickson, Alve J.; and Thulman, Robert D. Mountain monorail slide. 4,236,454, Cl. 104-69.000.
Erickson, Clyde W.: *See—*
Erickson, Alfred C.; and Erickson, Clyde W., 4,237,410, Cl. 320-14.000.
Erickson, Robert W., Jr.; and Stevens, G. Randall, to Per Sci, Inc. Disk drive system. 4,237,502, Cl. 360-78.000.
Ernerot, Lennart S., to Astra Lakemedel Aktiebolag. Process for storage. 4,236,633, Cl. 206-213.100.
Erskine, William G.: *See—*
Schweizer, Alfred D.; Erskine, William G.; and Turpin, Daniel, 4,236,532, Cl. 131-9.000.
Esselte Pendaflex Corporation: *See—*
Edwards, Richard A., 4,236,659, Cl. 226-58.000.
Etablissement Dentaire Ivoclar: *See—*
Michl, Rudy; and Dorsch, Peter, 4,236,922, Cl. 75-134.00D.
Ethyl Corporation: *See—*
Davis, Bryan T.; and Retzloff, James B., 4,236,898, Cl. 44-66.000.
Evans Products Company: *See—*
Young, James; Geissel, Charles H.; and Zenczak, Piotr, 4,237,083, Cl. 264-41.000.
Evans, William D. J.; Larbey, Robert J.; and Stewart, Thomas I., to Johnson, Matthey & Co., Limited. Catalysts. 4,237,032, Cl. 252-462.000.
Evenden, Theodore M.: *See—*
Dunn, Bruce S.; and Evenden, Theodore M., 4,236,661, Cl. 228-184.000.
Eversman Mfg. Company, The: *See—*
Shader, Benjamin A.; and Mayeda, Bruce H., 4,236,586, Cl. 172-779.000.
Shader, Benjamin A.; and Mayeda, Bruce H., 4,236,587, Cl. 172-779.000.
EVT Energie- und Verfahrenstechnik GmbH: *See—*
Marquardt, Kurt, 4,237,007, Cl. 210-181.000.
Exell, Stuart F.: *See—*
Gillot, Jacques; Exell, Stuart F.; and Lux, Benno, 4,237,107, Cl. 423-445.000.
Exxon Research & Engineering Co.: *See—*
Johnson, Jack W., 4,237,061, Cl. 260-429.300.
Thompson, Arthur H.; Symon, Charles R.; and Jacobson, Allan J., 4,237,204, Cl. 429-194.000.
Woolhouse, Geoffrey R.; Huggins, Harold A.; Anderson, Stephen I.; and Scholl, Frederick R., 4,236,296, Cl. 29-583.000.
F. T. Read & Sons, Inc.: *See—*
Read, James L.; and Morgan, William K., 4,237,000, Cl. 209-319.000.
Fabrica d'Armi Pietro Beretta S.p.A.: *See—*
Beretta, Pier C., 4,236,337, Cl. 42-7.000.
Fadeev, Alexandr I.: *See—*
Batjukov, Vladimir I.; Vjugov, Oleg N.; Fadeev, Alexandr I.; and Shkhian, Tsolak G., 4,236,967, Cl. 176-30.000.
Ljubivy, Alexandr G.; Batjukov, Vladimir I.; Shkhian, Tsolak G.; and Fadeev, Alexandr I., 4,236,969, Cl. 176-61.000.
Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., to American Home Products Corporation. N-substituted cyclopeptide derivatives and preparation thereof. 4,237,045, Cl. 260-112.50R.
Fairchild, Harold W., to Outboard Marine Corporation. Electronically controlled C.D. ignition and interlocking shut-off system. 4,236,494, Cl. 123-148.0CC.
Fanselow, Dan L., to Minnesota Mining and Manufacturing Company. Photochromic aziridine recording media. 4,237,211, Cl. 430-338.000.
Fasano, Michael C.: *See—*
De Luca, Paul V.; and Fasano, Michael C., 4,237,346, Cl. 179-35.000.
Fauchier, Jess F., II, to Pako Corporation. Exposure time control for photographic printer. 4,236,818, Cl. 355-77.000.
Fauls, Thomas J., to Mego Corp. Flexible doll closure and head mounting. 4,236,347, Cl. 46-156.000.
Favre, Ernest. Boom for containing and collecting oil spills on the surface of a body of water. 4,237,012, Cl. 210-242.00S.
Feamster, William C., III. Canopy cutting device. 4,236,428, Cl. 82-4.00R.
Fearnhead, Robert, to Automotive Products Limited. Filter units. 4,237,015, Cl. 210-444.000.
Fechant, Louis; Guery, Jean-Pierre; and Martin, Gabriel, to La Telemecanique Electrique. Blowing element. 4,237,355, Cl. 200-147.00R.
Fedechko, Walter J., to Certified Chemicals, Inc. Dishwashing composition and method of making the same. 4,237,024, Cl. 252-99.000.
Fedrigo, Renzo, to C.G.S. Istrumenti Di Misura S.p.A. Thermal writing device for recording apparatus. 4,237,467, Cl. 346-76.00R.
Feher, Peter: *See—*
Tusso, Robert J.; Feher, Peter; Schultes, Max; and Eberlein, Dietmar, 4,236,808, Cl. 355-8.000.
Feldle, Kurt, to SKF Kugellagerfabriken GmbH. Device for sealing and mounting a rolling-element bearing. 4,236,767, Cl. 308-187.100.
Feldmuhle Aktiengesellschaft: *See—*
Heys, Karel A. G., 4,236,998, Cl. 209-246.000.
Felix, Kenneth A., to Motorola, Inc. Bus arbiter. 4,237,534, Cl. 364-200.000.
Felker, Merle, to Sheffer Collet Company. Double acting cam operated chuck collet. 4,236,722, Cl. 279-118.000.
Fellner, Van N.; and Ruskin, Frank. Compact vending machine. 4,236,649, Cl. 221-90.000.
Fellrath, Jean; Perotto, Jean-Felix; Schneiter, Ali; and Grimm, Maurice, to Ebauches S.A. Electronic timepiece. 4,237,548, Cl. 368-69.000.
Ferguson, Helaman R. P.: *See—*
Bass, Robert W.; Ferguson, Helaman R. P.; Fletcher, Harvey J.; Gardner, John H.; Harrison, B. Kent; and Larsen, Kenneth M., 4,236,964, Cl. 176-3.000.
Fernotex Fernost-Testihandel: *See—*
LeBouder, Maurice, 4,237,371, Cl. 235-92.0PD.
Ferranti Limited: *See—*
Pitches, Brian E.; Murray, Robert M. S.; and Greig, Ian A., 4,237,537, Cl. 364-465.000.
Ferrari, Lorenzo: *See—*
Bruzzese, Tiberio; and Ferrari, Lorenzo, 4,237,117, Cl. 424-122.000.
Ferro Corporation: *See—*
Brueggemann, Walter H.; and Meteer, Charles L., 4,237,176, Cl. 428-212.000.
Filippov, Vladimir J.: *See—*
Savin, Nikolai I.; Khramov, Dmitry A.; Filippov, Vladimir J.; and Bugrov, Valery V., 4,236,966, Cl. 176-30.000.
Filtrol Corporation: *See—*
Alifandi, Hamid; and Stamires, Dennis, 4,237,031, Cl. 252-438.000.
Firestone Tire & Rubber Company, The: *See—*
Allcock, Harry R.; and Ritchie, Robert J., 4,237,263, Cl. 528-399.000.
Halasa, Adel F.; Carlson, David W.; and Hall, James E., 4,237,245, Cl. 525-272.000.
Fischer & Porter Co.: *See—*
Appel, Eggert; Geisler, Gottfried; Kiene, Wilfried; and Nissen, Peter, 4,236,410, Cl. 73-194.0EM.
Ketelsen, Broder, 4,236,411, Cl. 73-194.0EM.
Ratigan, Brian; Longley, Karl E.; and Roop, Robert N., 4,237,008, Cl. 210-205.000.
Fishburn, Charles E., to National Printing Plate Company, Inc. Rotating fastener mechanism for holding a workpiece in a washing apparatus. 4,236,542, Cl. 134-153.000.
Fisher, Gary H., to Industrial Sheet Metal & Mechanical Corp. Ordering system for tobacco bulk curing barn. 4,236,537, Cl. 131-134.000.
Fisher, Jack W., to Eli Lilly and Company. Crystalline 3-hydroxycephalosporin solvates. 4,237,279, Cl. 544-16.000.
Fisher Stove Works: *See—*
Bitler, Harold C., 4,236,501, Cl. 126-197.000.
Fisons Limited: *See—*
Parsons, John H., 4,237,127, Cl. 424-244.000.
Fitch, Richard A.; Drummond, James E.; and Mondelli, Alfred A., to Maxwell Laboratories, Inc. Electrostatic precipitator apparatus having an improved ion generating means. 4,236,900, Cl. 55-138.000.
Fitoussi, Fredj; and Maldonado, Paul, to Elf Union. Method for the preparation of bitumens modified by polymers. 4,237,052, Cl. 260-28.5AS.
Fleischmann, Martin: *See—*
Backhurst, John R.; Fleischmann, Martin; Goodridge, Francis; and Plimley, Raymond E., 4,236,991, Cl. 204-272.000.
Fletcher, Harvey J.: *See—*
Bass, Robert W.; Ferguson, Helaman R. P.; Fletcher, Harvey J.; Gardner, John H.; Harrison, B. Kent; and Larsen, Kenneth M., 4,236,964, Cl. 176-3.000.
Florence, Otis. Retractable rake. 4,236,742, Cl. 294-24.000.
Floyd, James K., to Gyne-Tech Instrument Corporation. Cryogenic device selectively operable in a continuous freezing mode, a continuous thawing mode or a combination thereof. 4,236,518, Cl. 128-303.100.
Floyd, Middleton B., Jr.: *See—*
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,237,316, Cl. 562-503.000.
FMC Corporation: *See—*
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, 4,237,058, Cl. 260-343.30R.
Focke & Co.: *See—*
Krautter, Hermann; and Focke, Heinz, 4,236,663, Cl. 229-44.0CB.
Focke, Heinz: *See—*
Krautter, Hermann; and Focke, Heinz, 4,236,663, Cl. 229-44.0CB.
Fodor, Lawrence M., to Phillips Petroleum Company. Catalyst comprising intensely mixed triaryl phosphite, aluminum trihalide, titanium trihalide component. 4,237,029, Cl. 252-429.00B.
Foldes, Stephen. Thermoconstrictive disconnect of conductors in electrical apparatus. 4,237,513, Cl. 361-103.000.
Ford Motor Company: *See—*
Chattha, Mohinder S., 4,237,241, Cl. 525-110.000.
Forford, Thorleif, to ASEA Aktiebolag. Differential protection circuitry for electrical devices. 4,237,512, Cl. 361-87.000.
Forster, Allen V.; Martz, Lyle E.; and Leng, Douglas E., to Dow Chemical Company, The. Process for separating and recovering concentrated hydrochloric acid from the crude product obtained from the acid hydrolysis of cellulose. 4,237,110, Cl. 423-488.000.
Forster, Helmut: *See—*
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.

Forster, Leslie L.: *See—*
Raseley, LeRoy J.; Forster, Leslie L.; and Hay, Edward F., 4,236,575, Cl. 165-113.000.

Forsythe, Calvin C.: *See—*
Wood, Loren E.; Forsythe, Calvin C.; Strelow, John L.; Short, Edward H., III; Allen, Jerome D.; and Clift, Miner E., 4,236,648, Cl. 220-89.00A.

Foster, C. Thomas: *See—*
Kohm, Richard C.; and Foster, C. Thomas, 4,236,333, Cl. 40-212.000.

Foster, Gary H.; and Lombard, Marco H., to Emerson Electric Co. Apparatus for cutting vegetation. 4,236,312, Cl. 30-276.000.

Foster, Michael R.: *See—*
Alley, William L.; Roberts, David E.; Root, Charles J.; and Foster, Michael R., 4,237,099, Cl. 422-171.000.

Foster, Norman; and Stephenson, Alan G., to British-American Tobacco Company Limited. Smoking articles. 4,236,538, Cl. 131-149.000.

Fouassier, Claude: *See—*
Dougier, Patrick; Fouassier, Claude; and Latourrette, Bertrand, 4,237,027, Cl. 252-301.40H.

Fox, Earl W. Bottle carrier. 4,236,743, Cl. 294-27.00H.

Frank, Benno: *See—*
Dammann, Peter; and Frank, Benno, 4,236,323, Cl. 34-152.000.

Frank, Robert G.: *See—*
Thomas, Dean L.; Frank, Robert G.; and Claassen, George R., 4,236,909, Cl. 65-115.000.

Franke, Albrecht: *See—*
Thieme, Peter C.; Frickel, Fritz-Frieder; Hagen, Helmut; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,237,278, Cl. 542-429.000.

Frankel, Lawrence S., to Rohm and Haas Company. Uses of chelated metal catalysts for acid/epoxy polymer systems. 4,237,242, Cl. 525-119.000.

Franken, Adrianus J. J.; and Degger, Wolter W. J., to U.S. Philips Corporation. Television camera with pick-up tube mounting means. 4,237,480, Cl. 358-55.000.

Frantzen, John J., to Minnesota Micro Metal, Inc. Etched metal abrasives. 4,236,357, Cl. 51-309.000.

Franz, Manfred: *See—*
Worgt, Walter; Pechau, Gerhard; Wyzgol, Ewald; and Franz, Manfred, 4,236,551, Cl. 140-1.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Collen, Heinrich, 4,236,453, Cl. 104-15.000.
Theurer, Josef; and Brunninger, Manfred, 4,236,452, Cl. 104-2.000.

Fraser, Bruce A.; and Yannascoli, Donald, to Carrier Corporation. Multiple compressor system. 4,236,876, Cl. 417-250.000.

Frecka, Thomas R., to Cincinnati Milacron Inc. Method and apparatus for modifying the operation of a machine tool as a function of torque. 4,237,408, Cl. 318-571.000.

Fredrickson, Lloyd C.: *See—*
Rudy, Norman A.; and Fredrickson, Lloyd C., 4,236,277, Cl. 17-73.000.

Frei, Hans-Rudolf: *See—*
Mentzel, Detlef; and Frei, Hans-Rudolf, 4,237,179, Cl. 428-276.000.

Freiter, Edward R.: *See—*
Dowd, William; Krauss, Richard C.; and Freiter, Edward R., 4,237,304, Cl. 548-239.000.

French Masterpieces, Incorporated: *See—*
Batstone, Roger J., 4,236,258, Cl. 4-172.120.

Frentzel, Kurt H., to Hunter Douglas International N.V. Fastening member for securing the slats of a venetian blind to a support element and method for assembly. 4,236,567, Cl. 160-178.00R.

Fricke, Roy A. Modular air purifying device. 4,236,902, Cl. 55-279.000.

Frickel, Fritz-Frieder: *See—*
Thieme, Peter C.; Frickel, Fritz-Frieder; Hagen, Helmut; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,237,278, Cl. 542-429.000.

Friedlander, Bruce W. Shoe with adjustable orthopedic appliance. 4,236,328, Cl. 36-58.500.

Friedrich, Heinz: *See—*
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Schreyer, Gerd, 4,237,299, Cl. 546-250.000.

Fries, Walter. Developing apparatus for the dry development of photosensitive sheet material. 4,236,805, Cl. 354-300.000.

Frohberger, Paul-Ernst: *See—*
Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,237,143, Cl. 424-270.000.

Fuga, Nobuhiko; Uchimura, Kunio; and Takahashi, Hideyuki, to Mitsubishi Petrochemical Company Limited. Method of inhibiting polymerization of styrene. 4,237,326, Cl. 585-4.000.

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Tsuchida, Takashi; Shinoda, Kenichi; Yamamoto, Kohei; and Suzuki, Toshio, 4,237,203, Cl. 429-122.000.

Fuji Photo Film Co., Ltd.: *See—*
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; Furutachi, Nobuo; and Nakamura, Kotaro, 4,237,217, Cl. 430-387.000.
Fujita, Yoshihiro, 4,237,206, Cl. 430-11.000.
Ikenoue, Shinpei; and Masuda, Takao, 4,237,215, Cl. 430-619.000.
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Tsujino, Nobuyuki, 4,237,214, Cl. 430-441.000.
Nahara, Akira; Wada, Minoru; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,237,468, Cl. 346-135.100.
Nakamura, Takeshi; and Kushima, Hiroshi, 4,236,710, Cl. 271-108.000.

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Kaneko, Nobutaka; and Fujimori, Ryo, 4,236,828, Cl. 356-444.000.

Fujimoto, Sakae, to Ricoh Company, Ltd. Pneumatic sheet feeder. 4,236,707, Cl. 271-11.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kamiya, Takashi; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; and Takeno, Hidekazu, 4,237,305, Cl. 560-29.000.

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Fujiwara, Junichi; and Nakamura, Kazuo, to Nihon Shinku Gijutsu Kabushiki Kaisha. Process for the surface treatment of a synthetic resin lens and the product thereof. 4,237,183, Cl. 428-336.000.

Fujiwara, Shinji: *See—*
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Fulmer, Glenn E.; and Murch, Robert M., to W. R. Grace & Co. Method of sealing interior mine surface with a fire retardant hydrophilic polyurethane foam and resulting product. 4,237,182, Cl. 428-310.000.

Fun Sculpture, Inc.: *See—*
McCarty, Mary D., 4,236,705, Cl. 269-100.000.

Furukawa, Hiroshi: *See—*
Kamiyama, Setsuo; Nagashima, Yukio; Furukawa, Hiroshi; and Kaneko, Katsumi, 4,237,329, Cl. 585-474.000.

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Uno, Hitoshi; Nagai, Yasutaka; Karasawa, Tadahiko; and Furukawa, Kiyoshi, 4,237,135, Cl. 424-250.000.

Furuta, Yasuhiko: *See—*
Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, 4,237,141, Cl. 424-267.000.

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Kiss, Sandor; and Nagy, Zsolt, 4,236,597, Cl. 181-224.000.

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Nakamine, Chosin; and Fuzii, Norihito, 4,236,486, Cl. 118-691.000.

G.A.O. Gesellschaft fur Automation und Organisation mbH: *See—*
Boettge, Horst; Mitzel, Wilhelm; Bernardi, Herbert; Geier, Josef; Osswald, Norbert; von Aschwege, Gerd; and Schaetz, Robert, 4,236,639, Cl. 209-534.000.
Hoese, Frank; von Aschwege, Gerd; and Bernardi, Herbert, 4,236,858, Cl. 414-331.000.

G K T Gesellschaft fur Kernverfahrenstechnik mbH: *See—*
Meinke, Peter; and Zippe, Gernot, 4,236,426, Cl. 74-574.000.

Gach, Peter P., to Sunbeam Plastics Corporation. Child-resistant dispensing closure. 4,236,653, Cl. 222-153.000.

Gadient, Fulvio, to Sandoz Ltd. Quaternary tropane ethers. 4,237,296, Cl. 546-126.000.

Gadzhiev, Tofik A.: *See—*
Aliev, Sakhib M. O.; Aliev, Vagab S.; Agaeva, Magira A. K.; Gadzhiev, Tofik A.; Guseinov, Vagif B. G. O.; and Ismailova, Zemfira A. B. K., 4,237,041, Cl. 260-33.6UA.

Gala, Hiren S.: *See—*
Orr, David A.; Gala, Hiren S.; and Scagnelli, George J., 4,236,292, Cl. 29-408.000.

Gallaher Limited: *See—*
Schweizer, Alfred D.; Erskine, William G.; and Turpin, Daniel, 4,236,532, Cl. 131-9.000.

Gallant, James O., to SW (Delaware), Inc. Curved roll having sealed torsional coupling between roll sections. 4,236,285, Cl. 26-103.000.

Galle, Edward M., to Hughes Tool Company. Earth boring drill bit with snap ring cutter retention. 4,236,764, Cl. 308-8.200.

Galluzzi, Giovanni, to Giulio Fiocchi, S.p.A. Self-propelling projectile for firearms. 4,236,451, Cl. 102-38.0RA.

Gandon, Louis: *See—*
Demarthe, Jean-Michel; Gandon, Louis; and Goujet, Monique, 4,236,981, Cl. 204-113.000.

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Aboaf, Joseph A.; Cuomo, Jerome J.; Gangulee, Amitava; and Kobliska, Robert J., 4,236,946, Cl. 148-108.000.

Ganz, Rudolf V., Jr.; and Winchell, David A., to Baxter Travenol Laboratories, Inc. Closure for pharmaceutical containers. 4,236,646, Cl. 215-232.000.

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Bass, Robert W.; Ferguson, Helaman R. P.; Fletcher, Harvey J.; Gardner, John H.; Harrison, B. Kent; and Larsen, Kenneth M., 4,236,964, Cl. 176-3.000.

Garrison, William H. Improved galvanizing method [and apparatus]. 4,237,154, Cl. 427-241.000.

Gas Spring Corporation: *See*—
Smith, Lawther O.; Howard, Timothy L.; and Broitman, Kalman, 4,236,845, Cl. 403-144.000.

Gass, Ernst, to Novotechnik KG Offterdinger & Co. Movable wiper for potentiometers. 4,237,443, Cl. 338-202.000.

Gatling, Sterling C., to Dow Chemical Company, The. Removal of oxazole from acrylonitrile. 4,237,303, Cl. 548-235.000.

Gauhl, Helmgard; and Seidel, Hans, to Boehringer Mannheim GmbH. Process for obtaining maltose phosphorylase and β-phosphoglucomutase and method of determining α-amylase using same. 4,237,221, Cl. 435-15.000.

Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., to Olin Corporation. Ingot shape control by dynamic head in electromagnetic casting. 4,236,570, Cl. 164-49.000.

Gautreaux, Gloria A.: *See*—
Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., 4,236,890, Cl. 8-2.50A.

Gavioli, Gabriele: *See*—
Palmonari, Carlo; and Gavioli, Gabriele, 4,236,321, Cl. 34-57.00E.

Gawlik, Charles B.; Hali, James D.; and Matsunaga, Douglas S., to Braner Enterprises, Inc. Multiple head slitter. 4,236,431, Cl. 83-479.000.

Gear/tronics Corporation: *See*—
Musial, George J., 4,236,415, Cl. 74-25.000.

Gebr. Berchtold: *See*—
Mantele, Erwin, 4,236,844, Cl. 403-55.000.

Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H.: *See*—
Groger, Hans, 4,236,758, Cl. 299-42.000.

Gehle, Richard W., to Rockwell International Corporation. Method for releasably mounting a substrate on a base providing heat transfer and electrical conduction. 4,237,086, Cl. 264-130.000.

Geier, Josef: *See*—
Boettge, Horst; Mitzel, Wilhelm; Bernardi, Herbert; Geier, Josef; Osswald, Norbert; von Aschwege, Gerd; and Schaetz, Robert, 4,236,639, Cl. 209-534.000.

Geisler, Gottfried: *See*—
Appel, Eggert; Geisler, Gottfried; Kiene, Wilfried; and Nissen, Peter, 4,236,410, Cl. 73-194.0EM.

Geissel, Charles H.: *See*—
Young, James; Geissel, Charles H.; and Zenczak, Piotr, 4,237,083, Cl. 264-41.000.

Geisthoff, Hubert, to Jean Walterscheid GmbH. Separable three-section telescopic drive shaft. 4,236,388, Cl. 64-23.000.

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Gelin, Guy, to Saft Leclanche. Cylindrical electric cell. 4,237,199, Cl. 429-94.000.

Gelperin, Nison I.; Polotsky, Leonid M.; and Konovalenko, Nikolai A. Apparatus for eliminating residual solvent from crumbled polymer. 4,236,958, Cl. 159-16.00S.

General Dynamics Corporation Pomona Division: *See*—
Becnel, Larry H., 4,236,427, Cl. 81-3.00R.
Palmer, John P., 4,236,784, Cl. 350-96.200.

General Electric Company: *See*—
Baldwin, Samuel L., 4,237,528, Cl. 362-263.000.
Baliga, Bantval J., 4,236,947, Cl. 148-171.000.
Cutler, John H.; and Walker, Loren H., 4,237,531, Cl. 363-58.000.
Dunn, Bruce S.; and Evenden, Theodore M., 4,236,661, Cl. 228-184.000.
Easley, John K., 4,237,415, Cl. 324-54.000.
Eliassen, John D.; Lee, Gim F., Jr.; and Watson, James, Jr., 4,237,265, Cl. 528-496.000.
Jackson, Melvin R.; and Rairden, John R., III, 4,237,193, Cl. 428-678.000.
Keeley, Donald E., 4,237,259, Cl. 528-204.000.
Ketchum, Marshall D.; and Yerman, Alexander J., 4,236,404, Cl. 73-19.000.
Meyer, Leslie D., 4,237,454, Cl. 340-682.000.
Sugalski, Raymond K., 4,237,409, Cl. 320-2.000.
Van Bennekom, Carl F.; Rogers, Donald E.; and Scannell, Edward F., 4,237,418, Cl. 324-150.000.
Vogt, Robert L., 4,236,378, Cl. 60-757.000.
Waldron, Wesley K., 4,237,421, Cl. 328-5.000.
Welch, Stanley B., 4,237,368, Cl. 219-449.000.
Wilson, Samuel R., 4,237,519, Cl. 361-327.000.
Woods, Lee O.; and Haag, Donald L., 4,237,508, Cl. 361-24.000.

General Motors Corporation: *See*—
Alley, William L.; Roberts, David E.; Root, Charles J.; and Foster, Michael R., 4,237,099, Cl. 422-171.000.
Main, Ray F., Jr., 4,236,941, Cl. 148-16.500.
Matter, Robert C., 4,237,205, Cl. 429-234.000.
Roberts, David E., 4,237,098, Cl. 422-171.000.
Widdowson, Richard E., 4,236,875, Cl. 417-222.000.

General Signal Corporation: *See*—
Slama, William R.; Washburn, Robert B.; and Semanisin, Dale J., 4,237,177, Cl. 428-215.000.

General Tire & Rubber Company, The: *See*—
Hendricks, Ronald S., 4,237,153, Cl. 427-140.000.
Kalafus, Edward F.; and Sharma, Satish C., 4,236,564, Cl. 152-359.000.
Kuan, Tiong H., 4,237,173, Cl. 428-65.000.

Genese, Joseph N., to Abbott Laboratories. Equipment sets and system for the sequential administration of medical liquids at dual flow rates employing parallel secondary liquid tubing. 4,236,515, Cl. 128-214.00G.

Gentile, Camillo: *See*—
Bialski, Alexander; Gentile, Camillo; and Sepall, Ola, 4,236,676, Cl. 241-74.000.

Geolograph Company, The: *See*—
Corry, Stuart E., 4,236,408, Cl. 73-151.000.

Georgia-Pacific Corporation: *See*—
Jespersen, Paul W., 4,236,679, Cl. 242-55.530.

Geurts, Cletus J., to Geurts Inc. Toggle link trip and reset mechanism for earthworking tool. 4,236,583, Cl. 172-266.000.

Geurts Inc.: *See*—
Geurts, Cletus J., 4,236,583, Cl. 172-266.000.

Ghelli, Giovanni; Bruschi, Enrico; and Agnese, Gino, to Luigi Stoppani S.p.A. Two stage process for preparing 2,6-pyridin-dicarboxylic acid. 4,237,301, Cl. 546-327.000.

Ghosh, Arup K.: *See*—
Strongin, Myron; Ghosh, Arup K.; Wiesmann, Harold J.; Rock, Edward B.; and Lutz, Harry A., III, 4,237,151, Cl. 427-74.000.

Giacomotti, Richard A.; Giacomotti, Sally A.; Petrini, Julian L.; Petrini, Madeline A.; and Slater, Ted L. Event monitor for court games. 4,237,376, Cl. 235-487.000.

Giacomotti, Sally A.: *See*—
Giacomotti, Richard A.; Giacomotti, Sally A.; Petrini, Julian L.; Petrini, Madeline A.; and Slater, Ted L., 4,237,376, Cl. 235-487.000.

Gibson, Robert C.: *See*—
Korenko, Michael K.; Merrick, Howard F.; and Gibson, Robert C., 4,236,943, Cl. 148-32.500.

Giebel, Wolfgang; Krause, Herbert; and Meltsch, Hans-Juergen, to Siemens Aktiengesellschaft. Multiple joint box utilizing a thermoplastic clamping sleeve principle. 4,237,335, Cl. 174-92.000.

Giles, Richard F.: *See*—
LaSpisa, Ronald J.; and Giles, Richard F., 4,237,082, Cl. 264-40.600.

Gilford Instrument Laboratories, Inc.: *See*—
Gilford, Saul R.; Emary, Robert J.; and Carey, Glen A., 4,236,825, Cl. 356-414.000.

Gilford, Saul R.; Emary, Robert J.; and Carey, Glen A., to Gilford Instrument Laboratories, Inc. Automatic monochromatic light absorbance measurement analyzer. 4,236,825, Cl. 356-414.000.

Gillespy, Keith R., to Platt Saco Lowell Limited. Warp sheet splitting device for a drying chamber in a yarn sizing process. 4,236,319, Cl. 34-12.000.

Gillin, James; and Jacobus, David P., to Merck & Co., Inc. Combination of thiopeptin and rumensin to improve ruminant feed efficiency. 4,237,116, Cl. 424-117.000.

Gillot, Jacques; Exell, Stuart F.; and Lux, Benno, to Battelle Memorial Institute. Cellular carbon beads and process for fabrication. 4,237,107, Cl. 423-445.000.

Ginat, Esther. Packing case having expansible compartments. 4,236,615, Cl. 190-52.000.

Gingerich, David L.; and Cohn, Robert, to Champion International Corporation. Apparatus for applying sealing material to envelopes. 4,236,482, Cl. 118-642.000.

Ginn, Jack M.: *See*—
Tomka, Jiri; and Ginn, Jack M., 4,237,034, Cl. 260-18.00N.

Girling Limited: *See*—
Bayliss, John P., 4,236,612, Cl. 188-242.000.

Gitlin, Richard D.; Meadors, Howard C., Jr.; and Weinstein, Stephen B., to Bell Telephone Laboratories, Incorporated. Coefficient tap leakage for fractionally-spaced equalizers. 4,237,554, Cl. 375-15.000.

Giuffre, Luigi: *See*—
de Nora, Oronzio; Giuffre, Luigi; and Modica, Giovanni, 4,236,979, Cl. 204-98.000.

Giuffrida, John: *See*—
Johnson, Timothy E.; and Giuffrida, John, 4,237,023, Cl. 252-70.000.

Giuliano, Peter A.: *See*—
Policy, Jene A.; and Giuliano, Peter A., 4,236,728, Cl. 280-661.000.

Giulio Fiocchi, S.p.A.: *See*—
Galluzzi, Giovanni, 4,236,451, Cl. 102-38.0RA.

Givaudan Corporation: *See*—
Dubs, Paul; and Kuntzel, Heiner, 4,237,290, Cl. 544-335.000.

Gladden, Robert E.: *See*—
Hucul, Elias, Jr.; and Gladden, Robert E., 4,236,870, Cl. 416-97.00R.

Glass, Carl R. Mail box post bracket. 4,236,665, Cl. 232-39.000.

Glaubitz, Werner: *See*—
Krueger, Hans; and Glaubitz, Werner, 4,236,791, Cl. 350-345.000.

Gloucester Engineering Co., Inc.: *See*—
Schott, Charles M., Jr., 4,236,884, Cl. 425-72.00R.

Gnann, Alfons: *See*—
Gronbach, Wilhelm; and Gnann, Alfons, 4,236,272, Cl. 16-142.000.

Gogarty, William B.: *See*—
Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., 4,236,545, Cl. 137-13.000.

Gold- und Silber- Scheideanstalt Oberstein Franz Reischauer: *See*—
Reischauer, Axel, 4,236,560, Cl. 150-46.000.

Goldstein, Norman P.: *See*—
Playfoot, Kerwin C.; and Goldstein, Norman P., 4,237,380, Cl. 250-370.000.

Golenchenko, Valery A.: *See*—
Meierovich, Eduard A.; Shenderovich, Pavel B.; Chalisov, Jury I.; Golenchenko, Valery A.; Rybin, Igor V.; and Sukhushin, Vitaly B., 4,237,507, Cl. 361-19.000.

Gonseth, Denis R.; and Hauser, Charles, to Stellram S.A. Stratified protecting coating for wearing pieces and hard metal cutting tools. 4,237,184, Cl. 428-336.000.
Goodrich, Judson E., to Chevron Research Company. Polymerizable premix composition for preparation of polyurethane surfaces. 4,237,036, Cl. 260-28.00R.
Goodridge, Francis: *See*—
Backhurst, John R.; Fleischmann, Martin; Goodridge, Francis; and Plimley, Raymond E., 4,236,991, Cl. 204-272.000.
Goodwin, Edward C.: *See*—
Eller, Harry J.; Eller, Donald G.; Dudek, Edward R.; and Goodwin, Edward C., 4,237,342, Cl. 179-1.0PC.
Goodyear Aerospace Corporation: *See*—
Crossman, Richard L., 4,237,445, Cl. 340-58.000.
Goossens, Bernhard: *See*—
Kuster, Erich; Goossens, Bernhard; Barthell, Eduard; and Dahmen, Kurt, 4,237,067, Cl. 260-561.00N.
Gordon, Gary B. Self-focusing camera apparatus and method. 4,236,794, Cl. 354-25.000.
Gorsche, Robert D.; and Cloutier, Oscar H., to Jones & Vining, Incorporated. Welt. 4,236,327, Cl. 36-14.000.
Gosudarstvenny Nauchnoissledovatelsky Energeticheskiy Institut Imeni G. M. Krzhizhanovskogo: *See*—
Meierovich, Eduard A.; Shenderovich, Pavel B.; Chalisov, Jury I.; Golenchenko, Valery A.; Rybin, Igor V.; and Sukhushin, Vitaly B., 4,237,507, Cl. 361-19.000.
Gotcher, Alan J.: *See*—
van Konynenburg, Peter V.; Au, Andrew; Rauwendaal, Chris; and Gotcher, Alan J., 4,237,441, Cl. 338-22.00R.
Goto, Kenji: *See*—
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.
Gottlieb, David; and Zer, Eliezer. Apparatus for lifting a wheelchair onto the roof of an automoble. 4,236,860, Cl. 414-462.000.
Gottschlich, Alois; and Leverenz, Klaus, to Bayer Aktiengesellschaft. Monoazo dyestuff containing di-cyano substituents ortho to the azo group. 4,237,048, Cl. 260-207.100.
Gotz, Manfred K.: *See*—
Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., 4,237,045, Cl. 260-112.50R.
Gough, Stanley T. D., to Mobil Oil Corporation. Formamide catalysts for reacting phosphorus halides with thiols. 4,237,075, Cl. 260-976.000.
Goujet, Monique: *See*—
Demarthe, Jean-Michel; Gandon, Louis; and Goujet, Monique, 4,236,981, Cl. 204-113.000.
Graham Magnetics Inc.: *See*—
Manly, William A., 4,237,506, Cl. 360-135.000.
Granger Associates: *See*—
Narasimha, Madihally J., 4,237,551, Cl. 370-50.000.
Granholm, Carl, to Interlock Sicherheitssysteme GmbH, Firma; and Interflex Datensysteme GmbH & Co. K.G., Firma. Opto-electronic apparatus for reading information contained in an information carrier. 4,237,375, Cl. 235-487.000.
Grantham, Daniel H., to United Technologies Corporation. Hydrogen gas generation utilizing a bromide electrolyte, an amorphous silicon semiconductor and radiant energy. 4,236,984, Cl. 204-129.000.
Grass, Klaus: *See*—
Schmidt, Klaus; and Grass, Klaus, 4,236,314, Cl. 33-126.600.
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, to VEB Arzneimittelwerk Dresden. Process for the isolation of ergot alkaloids from culture suspensions. 4,237,291, Cl. 544-346.000.
Green, Frank B. Pulping lignocellulose in continuous pressurized batch digesters. 4,236,961, Cl. 162-52.000.
Green, Leland D., to United States of America, Air Force. Imagery with constant range lines. 4,236,819, Cl. 356-5.000.
Greengrass, Colin W.: *See*—
Campbell, Simon F.; Danilewicz, John C.; and Greengrass, Colin W., 4,237,138, Cl. 424-251.000.
Gregory, Ted W., to Arens Controls, Inc. Hydraulic system control means. 4,236,757, Cl. 298-22.00C.
Greig, Ian A.: *See*—
Pitches, Brian E.; Murray, Robert M. S.; and Greig, Ian A., 4,237,537, Cl. 364-465.000.
Greiner, Max; Peters, Klaus J.; Schelthas, Peter; Stiefel, Peter; and Nusser, Hermann, to Robert Bosch GmbH. Fuel supply device. 4,237,079, Cl. 261-44.00A.
Grethlein, Hans E., to Dartmouth College, Trustees of. Process for pretreating cellulosic substrates and for producing sugar therefrom. 4,237,226, Cl. 435-99.000.
Gridley, Marvin C.: *See*—
Byers, Stanley A.; McKee, James R., Sr.; and Gridley, Marvin C., 4,236,929, Cl. 106-52.000.
Gries, Josef: *See*—
Thieme, Peter C.; Frickel, Fritz-Frieder; Hagen, Helmut; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,237,278, Cl. 542-429.000.
Griffin, Richard J., deceased: *See*—
Duron, Ola; Griffin, Richard J., deceased; and United Bank of Denver, N. A., personal representative, 4,236,892, Cl. 23-230.00B.
Griffin, Roy N., Jr. Apparatus for and method of evaluating solar exposure. 4,236,313, Cl. 33-1.0DD.
Griffith, Dwight N. Empty beverage can carrier. 4,236,638, Cl. 206-493.000.
Griffith, Vern. Vacuum motor. 4,236,589, Cl. 173-169.000.
Grimm, Maurice: *See*—
Fellrath, Jean; Perotto, Jean-Felix; Schneiter, Ali; and Grimm, Maurice, 4,237,548, Cl. 368-69.000.
Grinberg, Aron K.: *See*—
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Grinchenko, Nikolai G.: *See*—
Chigirinsky, Alexandr A.; Danko, Vladimir G.; Grinchenko, Nikolai G.; Cheremisov, Ivan Y.; Tretevich, Roman I.; and Penkina, Galina V., 4,237,398, Cl. 310-214.000.
Grodzinsky, Eduard Y.; Isakova, Roalda B.; Zubatova, Lidia S.; Makonovitskaya, Anna T.; and Grinberg, Aron K. Method for machining works of current-conducting material with current-conducting abrasive tools. 4,236,985, Cl. 204-129.430.
Groger, Hans, to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H. Rack drive for a drum cutter mining machine. 4,236,758, Cl. 299-42.000.
Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Combating fungi with 2-methylene-3-substituted-4,5-bis-trifluoro-methyl iminothiazolidines. 4,237,143, Cl. 424-270.000.
Grohl, Friedrich, to VDO Adolf Schindling A.G. Indicator dial and method of making same. 4,236,480, Cl. 116-286.000.
Grolman, Bernard: *See*—
Whitney, Donald B.; Grolman, Bernard; and Richards, William, 4,236,793, Cl. 351-21.000.
Gronbach, Wilhelm; and Gnann, Alfons. Hinge comprising a compression spring, which is adapted to balance the weight of a hinged leaf. 4,236,272, Cl. 16-142.000.
Grosjean, Henri: *See*—
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,301, Cl. 29-740.000.
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,306, Cl. 29-827.000.
Grote, Albert J.: *See*—
Huang, Marshall Y.; Grote, Albert J.; and Yen, Kuo-Hsiung, 4,237,432, Cl. 333-194.000.
Grove, John L., to JLG Industries, Inc. Scissors lift with pipe handler. 4,236,861, Cl. 414-540.000.
Groves, Ian S.: *See*—
Bunting, John G.; Cross, Robin C.; Guard, David R.; Groves, Ian S.; Johnson, Edward G. T.; and Stevens, Alan E., 4,237,339, Cl. 179-1.0CN.
Gruenenwald, Stanley L., to Medtronic, Inc. Frequency to voltage converter for cardiac communication system. 4,236,523, Cl. 128-419.0PT.
Grumman Aerospace Corporation: *See*—
Barthelme, Richard W.; Leonard, John B.; and Biercuk, John N., 4,236,686, Cl. 244-116.000.
GTE Products Corporation: *See*—
Cooper, David A.; Monoski, William T.; and Vibert, Edward J., 4,237,435, Cl. 335-18.000.
Kresock, John M., 4,237,489, Cl. 358-168.000.
Guard, David R.: *See*—
Bunting, John G.; Cross, Robin C.; Guard, David R.; Groves, Ian S.; Johnson, Edward G. T.; and Stevens, Alan E., 4,237,339, Cl. 179-1.0CN.
Gudmandsen, Robert: *See*—
Hansen, Bjarne S.; and Gudmandsen, Robert, 4,237,348, Cl. 179-100.41R.
Hansen, Bjarne S.; and Gudmandsen, Robert, 4,237,349, Cl. 179-100.41D.
Gueremy, Claude G. A.: *See*—
Champseix, Alain A.; Gueremy, Claude G. A.; and Le Fur, Gerard R., 4,237,139, Cl. 424-258.000.
Guerini, Albert: *See*—
Ho, Bin L.; and Guerini, Albert, 4,237,504, Cl. 360-106.000.
Guerrini, Giampaolo, to Ing. C. Olivetti & C., S.p.A. Type-carrier disk with flexible tongues. 4,236,838, Cl. 400-144.300.
Guery, Jean-Pierre: *See*—
Fechant, Louis; Guery, Jean-Pierre; and Martin, Gabriel, 4,237,355, Cl. 200-147.00R.
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, to Siemens Aktiengesellschaft. Gas generator for catalytically reacting liquid, hydrocarbon containing fuel to be evaporated with an oxygen containing gas at elevated temperature to form a fuel gas, particularly for supplying internal-combustion engines. 4,236,899, Cl. 48-89.000.
Gulf Oil Corporation: *See*—
Hoffman, Otto L.; and Kirkpatrick, Joel L., 4,237,302, Cl. 548-139.000.
Murphy, Clarence R.; Boehme, Robert E., deceased; Boehme, Helen J., legal representative; and Phelp, Joseph P., executor, 4,237,081, Cl. 264-9.000.
Gunnarsson, Staffan H.: *See*—
Lampe, Vaino; Gunnarsson, Staffan H.; and Johansson, Karl-Erik, 4,236,920, Cl. 75-128.00A.
Gunther, Roland: *See*—
Sander, Gunter; and Gunther, Roland, 4,236,630, Cl. 198-577.000.

Guseinov, Novruz I. O.: *See*—
Aliev, Sakhib M. O.; Aliev, Vagab S.; Guseinov, Novruz I. O.; Nagiev, Vagif A. O.; and Sultanov, Nuri T. O., 4,237,323, Cl. 568-738.000.

Guseinov, Vagif B. G. O.: *See*—
Aliev, Sakhib M. O.; Aliev, Vagab S.; Agaeva, Magira A. K.; Gadzhiev, Tofik A.; Guseinov, Vagif B. G. O.; and Ismailova, Zemfira A. B. K., 4,237,041, Cl. 260-33.6UA.

Gustavsson, Kjell: *See*—
Yaman, Melih; Gustavsson, Kjell; and Hammer, Orjan, 4,236,944, Cl. 148-35.000.

Gustin, Pol A. G. J.; and Shayes, Raymond G. G., to U.S. Philips Corporation. Electrostatic write head. 4,237,469, Cl. 346-155.000.

Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See*—
Sander, Gunter; and Gunther, Roland, 4,236,630, Cl. 198-577.000.

Gutjahr, Manfred: *See*—
Buhl, Horst; and Gutjahr, Manfred, 4,236,927, Cl. 75-246.000.

Gutmann, Gunter; Kistrup, Holger; Bauchk, Friedrich G. K.; and M/ler, Gerd, to Deutsche Automobilgesellschaft mbH; and Jenaer Glaswerk Schott & Gen. Sodium ion-conducting glass electrolyte for sodium-sulfur batteries. 4,237,196, Cl. 429-50.000.

Gyne-Tech Instrument Corporation: *See*—
Floyd, James K., 4,236,518, Cl. 128-303.100.

Haag, Donald L.: *See*—
Woods, Lee O.; and Haag, Donald L., 4,237,508, Cl. 361-24.000.

Haar, Lucas H.; and Schafer, Ernst-Dieter, to ITT Industries, Inc. Brake-force regulator for dual-circuit brake systems. 4,236,760, Cl. 303-6.00C.

Haber, Terry M. Truss staple. 4,236,440, Cl. 85-49.000.

Habrich, Reiner: *See*—
Denk, Hans; and Habrich, Reiner, 4,237,149, Cl. 427-58.000.

Hachmeister, Bernd, to Kali-Chemie Pharma GmbH. Process for the production of 17-hydroxysparteine by oxidation of sparteine with a permanganate. 4,237,295, Cl. 546-63.000.

Hacke, Joseph F.: *See*—
Olson, Charles L.; and Hacke, Joseph F., 4,237,491, Cl. 358-223.000.

Hafer, Cameron H.; and Wilbur, Clayton V., to International Business Machines Corporation. Electrothermal printing apparatus. 4,236,834, Cl. 400-120.000.

Hagen, Helmut: *See*—
Thieme, Peter C.; Frickel, Fritz-Frieder; Hagen, Helmut; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,237,278, Cl. 542-429.000.

Hajos, Zoltan G.; and Wachter, Michael P., to Ortho Pharmaceutical Corporation. Synthesis of 1RS,4SR,5RS-4-(4,8-dimethyl-5-hydroxy-7-nonen-1-yl)-4-methyl-3,8-dioxabicyclo[3.2.1]octane-1-acetic acid. 4,237,055, Cl. 260-340.600.

Halasa, Adel F.; Carlson, David W.; and Hall, James E., to Firestone Tire & Rubber Company, The. Hydrogenated block copolymers of butadiene containing a block of 1,4 and a block of 1,2-microstructure. 4,237,245, Cl. 525-272.000.

Hall, James D.: *See*—
Gawlik, Charles B.; Hall, James D.; and Matsunaga, Douglas S., 4,236,431, Cl. 83-479.000.

Hall, James E.: *See*—
Halasa, Adel F.; Carlson, David W.; and Hall, James E., 4,237,245, Cl. 525-272.000.

Hall, John D.; and Williams, Alfred S., Jr., to Singer Company, The. Simulator control loading inertia compensator. 4,236,325, Cl. 35-12.00S.

Halwes, Dennis R.; and Simmons, William A., to Textron, Inc. Vibration suppression system. 4,236,607, Cl. 188-1.00B.

Hama, Kazuaki: *See*—
Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki, 4,237,266, Cl. 536-1.000.

Hamada, Nagaharu: *See*—
Nishio, Yoji; Hara, Toshitaka; and Hamada, Nagaharu, 4,237,543, Cl. 364-900.000.

Hamamatsu Corporation: *See*—
Pommerrenig, Dieter H., 4,237,471, Cl. 357-30.000.

Hamamatsu TV Co, Ltd.: *See*—
Pommerrenig, Dieter H., 4,237,471, Cl. 357-30.000.

Hamano, Hiroaki: *See*—
Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, 4,237,141, Cl. 424-267.000.

Hamel, Pierre A.; and Rokach, Joshua, to Merck Sharp & Dohme (I.A.) Corp. 3-Hydroxymethyldibenzo[b,f]thiepins as prostaglandin antagonists. 4,237,160, Cl. 424-275.000.

Hamill, Robert L., to Eli Lilly and Company. Process for preparing tunicamycin. 4,237,225, Cl. 435-75.000.

Hammann, Ingeborg: *See*—
Hoffmann, Hellmut; Hammann, Ingeborg; and Homeyer, Bernhard, 4,237,124, Cl. 424-211.000.

Hammer, Orjan: *See*—
Yaman, Melih; Gustavsson, Kjell; and Hammer, Orjan, 4,236,944, Cl. 148-35.000.

Hamon-Sobelco, S.A.: *See*—
Bosne, Jacques G. P. E., 4,236,574, Cl. 165-67.000.

Hancock, Henry. Process for making fire retardant polypropylene. 4,237,157, Cl. 427-352.000.

Hanma, Kentaro; and Murakami, Takeshi, to Hitachi, Ltd. Automatic tilt contrcl circuit for television receivers. 4,237,476, Cl. 358-38.000.

Hannah, Frank E.; and Hannah, Ronnie L. Collapsible automotive tool. 4,236,266, Cl. 7-100.000.

Hannah, Ronnie L.: *See*—
Hannah, Frank E.; and Hannah, Ronnie L., 4,236,266, Cl. 7-100.000.

Hansen, Bjarne S.; and Gudmandsen, Robert, to Ortofon Manufacturing A/S. Pickup having damping. 4,237,348, Cl. 179-100.41R.

Hansen, Bjarne S.; and Gudmandsen, Robert, to Ortofon Manufacturing A/S. Compact moving-coil pickup of low weight and high quality. 4,237,349, Cl. 179-100.41D.

Hanson, Merlin L.: *See*—
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,237,532, Cl. 364-200.000.

Hara, Toshitaka: *See*—
Nishio, Yoji; Hara, Toshitaka; and Hamada, Nagaharu, 4,237,543, Cl. 364-900.000.

Harada, Saburo: *See*—
Misaki, Hideo; Horiuchi, Yoshifumi; Matsuura, Kazuo; and Harada, Saburo, 4,237,222, Cl. 435-25.000.

Harand, Elmar; and Michel, Eberhard, to Kraftwerk Union Aktiengesellschaft. Structural unit formed of a coolant pump and a steam generator, especially for nuclear reactor plants secured against rupture. 4,236,970, Cl. 176-87.000.

Harasewych, Bohdan A., to Ogontz Controls Company. Self-cleaning valve plug and seat assembly. 4,236,547, Cl. 137-243.000.

Harbert, Charles A.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,237,133, Cl. 424-248.520.

Harford, Jack R., to RCA Corporation. Signal overload prevention circuit. 4,237,490, Cl. 358-174.000.

Harle, Friedrich, to Rudolf Wittner GmbH u. Co. Metronome. 4,237,549, Cl. 368-134.000.

Harper, Robert J., Jr.: *See*—
Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., 4,236,890, Cl. 8-2.50A.

Harries, John R.: *See*—
Smith, Stanley; and Harries, John R., 4,236,625, Cl. 198-454.000.

Harrington, Richard P.; and Harrington, Russell J. Padlocks and locks in general. 4,236,394, Cl. 70-25.000.

Harrington, Russell J.: *See*—
Harrington, Richard P.; and Harrington, Russell J., 4,236,394, Cl. 70-25.000.

Harris Corporation: *See*—
Schlough, James R., 4,236,706, Cl. 270-53.000.

Harrison, B. Kent: *See*—
Bass, Robert W.; Ferguson, Helaman R. P.; Fletcher, Harvey J.; Gardner, John H.; Harrison, B. Kent; and Larsen, Kenneth M., 4,236,964, Cl. 176-3.000.

Harrison, Donald A.; and Lanier, Howard A. Floor laying tool. 4,236,956, Cl. 156-527.000.

Harsco Corporation: *See*—
Turner, John; Koster, Richard A.; and Bassman, Seymour, 4,236,441, Cl. 89-40.00F.

Hart, LeRoy: *See*—
Surko, Walter E., Jr.; and Hart, LeRoy, 4,236,396, Cl. 70-107.000.

Hart, Thomas G., to Energy Development Associates, Inc. Electrochemical system. 4,237,197, Cl. 429-81.000.

Hartdegen, Frank J.; and Swann, Wayne E., to W. R. Grace & Co. Immobilization of biological material with polyurethane polymers. 4,237,229, Cl. 435-182.000.

Hartelmuller, Ludwig. Stackable transport container. 4,236,664, Cl. 229-49.000.

Harvey, Howard F., Jr. Helical coil rope fastening device. 4,236,282, Cl. 24-132.00C.

Hashimoto, Akira: *See*—
Matoba, Yasuo; Hashimoto, Akira; and Sugahara, Mikio, 4,237,247, Cl. 525-335.000.
Matoba, Yasuo; Kise, Yoshio; Yamada, Nobuo; Hashimoto, Akira; and Nakata, Tetsuya, 4,237,248, Cl. 525-335.000.

Hashimoto, Isao: *See*—
Nambu, Hirohiko; Hashimoto, Isao; and Imai, Ichiro, 4,237,319, Cl. 568-571.000.

Hashimoto, Masashi: *See*—
Kamiya, Takashi; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; and Takeno, Hidekazu, 4,237,305, Cl. 560-29.000.

Hass, Alan R., to Lyall Electric, Inc. Connector mold with flexible wire guide. 4,236,689, Cl. 249-204.000.

Hasselbach, Arthur, Sr. Seedling tray assembly and greenhouse. 4,236,350, Cl. 47-17.000.

Hastings, Allen M. Apparatus for and method of drying items by open air and solar energy. 4,236,322, Cl. 34-130.000.

Hastings, Paul F. Powered ground aerator. 4,236,582, Cl. 172-22.000.

Hatano, Tetsuo: *See*—
Shibano, Yoshizo; Hatano, Tetsuo; and Ohkura, Toshihiko, 4,237,465, Cl. 343-894.000.

Hatter, Edward E.; Taylor, Richard H.; and McGunigle, Richard D. Ultrasonic tooth cleaning apparatus. 4,236,510, Cl. 128-24.00A.

Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, to Nippondenso Co., Ltd.; Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition timing control apparatus for internal combustion engines. 4,236,491, Cl. 123-117.00D.

Hauni-Werke Korber & Co. KG: *See*—
Heitmann, Uwe; Steiniger, Wolfgang; Holznagel, Uwe; Kaebernick, Hartmut; Pfannmuller, Joachim; and Reuland, Joachim, 4,236,534, Cl. 131-21.00B.
Schmidt, Rolf; and Berlin, Herbert, 4,236,535, Cl. 131-21.00R.

Hauser, Charles: *See*—
Gonseth, Denis R.; and Hauser, Charles, 4,237,184, Cl. 428-336.000.
Hawker, Michael J., to Clayton Dewandre Company Limited. Full power hydraulic braking systems for tractor-trailer combinations. 4,236,762, Cl. 303-7.000.
Hay, Edward F.: *See*—
Raseley, LeRoy J.; Forster, Leslie L.; and Hay, Edward F., 4,236,575, Cl. 165-113.000.
Hayashi, Hiroo: *See*—
Murakami, Takeshi; Oeda, Yoshitaka; Hayashi, Hiroo; and Nakamura, Teruo, 4,236,732, Cl. 282-27.500.
Hayashi, Kenshin: *See*—
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, 4,237,280, Cl. 544-27.000.
Hayashi, Toshio; and Imura, Toshinori, to Minolta Camera Kabushiki Kaisha. Photographic camera provided with flash means. 4,236,796, Cl. 354-145.000.
Hayashi, Tsutomu: *See*—
Kitamura, Minoru; Hayashi, Tsutomu; Moritsugi, Takeharu; and Saruwatari, Mitsuyoshi, 4,236,914, Cl. 75-58.000.
Haynes, Elwood W. Storage holder for firewood and the like. 4,236,775, Cl. 312-351.000.
Hch. Bertrams Aktiengesellschaft: *See*—
Kuhnlein, Hans, 4,236,974, Cl. 203-11.000.
Head, Brian E., to International Standard Electric Corporation. Sealing glass envelopes. 4,236,908, Cl. 65-108.000.
Heaney, William B.; and Spector, George. Plant watering device. 4,236,352, Cl. 47-80.000.
Heard, Harold; and Wilt, Charles R., Jr., to Salem Corporation. Methods and apparatus for heating particulate material. 4,236,318, Cl. 34-10.000.
Hecht, Siegfried, to BBC Brown, Boveri & Company Limited. Coordinated communication system for transmitting data and method of operating the same. 4,237,338, Cl. 178-23.00A.
Hedley, Peter H.: *See*—
Buirski, David P.; and Hedley, Peter H., 4,236,474, Cl. 114-56.000.
Heian, Glenn A., to Allis-Chalmers Corporation. Method and apparatus for handling and utilizing system off-gas in a pyro-processing system. 4,236,887, Cl. 432-14.000.
Heidenbluth, Karlheinz: *See*—
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, 4,237,291, Cl. 544-346.000.
Heijnemans, Werner A. L.: *See*—
Vink, Nicolaas G.; Nieuwendijk, Joris A. M.; and Heijnemans, Werner A. L., 4,237,437, Cl. 335-211.000.
Heim, Clarence W., Jr.: *See*—
Wagner, Roland W.; and Heim, Clarence W., Jr., 4,236,855, Cl. 414-42.000.
Heinemann Electric Company: *See*—
Setescak, Edward J., 4,237,436, Cl. 335-63.000.
Heinemann, Otto: *See*—
Wessel, Josef A; Muller, Manfred; Heinemann, Otto; and Bredenholler, Norbert, 4,236,997, Cl. 209-144.000.
Heitmann, Uwe; Steiniger, Wolfgang; Holznagel, Uwe; Kaebernick, Hartmut; Pfannmuller, Joachim; and Reuland, Joachim, to Hauni-Werke Korber & Co. KG. Method and apparatus for monitoring the height of a stream of tobacco or the like. 4,236,534, Cl. 131-21.00B.
Hektoen, Per, to Moore Business Forms, Limited. Continuous stationery assembly and methods of making binders, folder covers and the like from the assembly. 4,236,731, Cl. 282-11.50A.
Helal, Mohammed A.: *See*—
Jurgens, Gunter R.; and Helal, Mohammed A., 4,237,385, Cl. 307-66.000.
Helke, Robert C., to Le Mere Industries, Inc. Method for treating waste water. 4,237,004, Cl. 210-40.000.
Hemshemeier, Hans: *See*—
Dorling, Rolf; and Hemshemeier, Hans, 4,236,573, Cl. 165-54.000.
Hendricks, Ronald S., to General Tire & Rubber Company, The. Method of stripping and repainting ethylene-propylene-non-conjugated-diene rubber parts. 4,237,153, Cl. 427-140.000.
Hendrickson, Thomas E., to Honeywell Inc. Semiconductor apparatus. 4,236,831, Cl. 357-30.000.
Henke, Ulrich; and Meyer, Reinhard, to Pierburg GmbH & Co. KG. Arrangement for regulating supercharger air pressure. 4,236,376, Cl. 60-602.000.
Henkel Corporation: *See*—
Spitzner, Ernest B., 4,237,062, Cl. 260-438.100.
Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See*—
Schwadike, Karl; Meyer, Dieter; and Puchta, Rolf, 4,236,320, Cl. 34-19.000.
Hennenfent, Douglas J.; Johnson, Robert A.; and Holmstrand, Allan L., to Control Data Corporation. Precision grinding wheel mount. 4,236,355, Cl. 51-168.000.
Hennrich, Norbert: *See*—
Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, 4,237,044, Cl. 260-112.00B.
Hensel, Erich E., to Hunter Douglas International N.V. External venetian blind. 4,236,566, Cl. 160-130.000.
Henson, Artel R., to Disco Engineering, Inc. Storage system. 4,236,772, Cl. 312-242.000.
Henter, Theodore C., Jr. Hydraulic suspension system for an individual vehicle wheel. 4,236,726, Cl. 280-709.000.
Hepner, Georges; and Castera, Jean-Paul, to Thomson-CSF. Electrically-controlled optical branch connection. 4,236,783, Cl. 350-96.130.
Hepner, Georges: *See*—
Castera, Jean-Paul; and Hepner, Georges, 4,236,782, Cl. 350-96.130.
Herbert, John T.; and Nixon, Larry R., to Aeroquip Corporation. Conduit swivel joint. 4,236,737, Cl. 285-234.000.
Herchenbach, Horst; and Lechner, Bartl, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for producing a hydraulic binder. 4,236,932, Cl. 106-100.000.
Hercules Incorporated: *See*—
Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., 4,236,545, Cl. 137-13.000.
Herman, Stephen J.: *See*—
Lobdell, Donn D.; Herman, Stephen J.; and Anderson, Robert L., 4,237,091, Cl. 422-46.000.
Herrling, Siegfried. Pharmaceutical compositions and methods of using thiadiazolo pyrimidinone compounds. 4,237,136, Cl. 424-251.000.
Hersey, James P.: *See*—
Manley, Claude E.; Pennella, John J.; Deaton, Donald J.; Crandall, Alan L.; and Hersey, James P., 4,236,546, Cl. 137-88.000.
Hesston Corporation: *See*—
Adee, Raymond A.; and Adee, Ellis E., 4,236,585, Cl. 172-587.000.
Hetherington, Ross W.; Armstrong, Kenneth J.; Ireland, Leonard; Canty, John; and Banfield, Ernest R., to Abbott Laboratories. Apparatus for fitting a resilient ring on a bottle. 4,236,305, Cl. 29-774.000.
Hetrick, Vernon L., to Meyer Products, Inc. Detachable blade mounting device. 4,236,329, Cl. 37-42.00R.
Hetzel, Eckhard: *See*—
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, 4,237,318, Cl. 562-609.000.
Heyer, Bruce A.; and Huth, Donald L., to Abex Corporation. Heat resistant alloy castings. 4,236,921, Cl. 75-134.00F.
Heys, Karel A. G., to Feldmuhle Aktiengesellschaft. Process and apparatus for purifying a fibrous suspension. 4,236,998, Cl. 209-246.000.
Hicap Engineering & Development Corporation: *See*—
Davis, William L., Jr., 4,236,699, Cl. 266-114.000.
Hickman, Ronald P.: *See*—
Luff, Brian A.; and Hickman, Ronald P., 4,236,599, Cl. 182-33.000.
Hicks, Gordon C.; and Megar, George H., to Tennessee Valley Authority. Production of solid ammonium polyphosphate by controlled cooling. 4,237,106, Cl. 423-315.000.
Hicks, Raymond J.; and Webb, John T. H., to Wharton Engineers (Elstree) Limited. Multicapstan traction unit. 4,236,696, Cl. 254-175.700.
Higo, Akio; and Suzuki, Yukio, to Sumitomo Chemical Company, Limited. Racemization of optically active α-substituted-α-phenylacetic acid derivatives. 4,237,313, Cl. 562-401.000.
Hildebrand, Donald L.; and Prescott, Ernest F., to Elgin Sweeper Company. Street sweeper having an elevating hopper with supporting outriggers. 4,236,756, Cl. 298-11.000.
Hillmann, Willi, to Paul Vahle KG. Current collector shoe. 4,236,616, Cl. 191-59.100.
Hills Industries Limited: *See*—
Calvert, Ronald J., 4,236,419, Cl. 74-89.150.
Hiltgen, Aloysius X.: *See*—
Strudgeon, George E.; and Hiltgen, Aloysius X., 4,237,002, Cl. 210-18.000.
Hilti Aktiengesellschaft: *See*—
Moldan, Karl; and Krueger, Wilm, 4,236,588, Cl. 173-48.000.
Hiramatsu, Toru; and Morita, Ken-ichi, to Toray Industries, Inc. Process for producing carbon fabric. 4,237,109, Cl. 423-447.500.
Hirdler, Louis C.: *See*—
Bartoszek, John A.; and Hirdler, Louis C., 4,237,285, Cl. 544-192.000.
Hirose, Akira; Sugita, Keiji; and Takagi, Yasuzi, to Ricoh Company, Ltd. Electrophotographic copying apparatus. 4,236,811, Cl. 355-14.00R.
Hirose, Yusuke: *See*—
Ito, Takehiko; Hirose, Yusuke; and Ishida, Hideaki, 4,237,192, Cl. 428-659.000.
Hirst, Peter B.; and Duthie, Anthony J., to Johnston Brothers (Engineering) Limited. Centrifugal fan impellers with blades secured between plates. 4,236,871, Cl. 416-186.00R.
Hisada, Yoshio: *See*—
Asao, Shuichiro; Yamamoto, Shigeo; Hisada, Yoshio; Nakayama, Yoshinori; and Takayama, Chiyozo, 4,237,122, Cl. 424-200.000.
Hitachi Chemical Company, Ltd.: *See*—
Ishimaru, Toshiaki; Nishizawa, Hiroshi; and Osada, Yuichi, 4,237,251, Cl. 525-440.000.
Hitachi Koki Co., Ltd.: *See*—
Matsuzaki, Kazuo; Katagiri, Shigenobu; and Nakano, Hiroshige, 4,236,447, Cl. 101-93.140.
Hitachi, Ltd.: *See*—
Abe, Nobuo, 4,236,879, Cl. 417-368.000.
Hanma, Kentaro; and Murakami, Takeshi, 4,237,476, Cl. 358-38.000.
Ikeda, Tsuneo; and Nunogawa, Yasuhiro, 4,237,487, Cl. 358-154.000.
Nishio, Yoji; Hara, Toshitaka; and Hamada, Nagaharu, 4,237,543, Cl. 364-900.000.
Oishi, Kazuaki; Nakano, Seizo; and Kitano, Yutaka, 4,237,520, Cl. 361-335.000.
Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, 4,236,925, Cl. 75-229.000.

Hitt, James A., to Buffalo Forge Company. Swing-away hold-down construction for bar or billet shear. 4,236,430, Cl. 83-461.000.

Ho, Bin L.; and Guerini, Albert, to Priam. Linear actuator including limit stop assembly for magnetic disc drive. 4,237,504, Cl. 360-106.000.

Hoadley, Howard W. Dental film packet and processor therefor. 4,236,806, Cl. 354-303.000.

Hodne, Ingard B., to Teletype Corporation. Dot impact printer and actuator therefor. 4,236,836, Cl. 400-124.000.

Hoechst Aktiengesellschaft: *See*—
Korbanka, Helmut; and Scheidl, Franz, 4,237,043, Cl. 260-45.75S.
Medic, Nikolaj; Auel, Theodor; Bergner, Dieter; and Russow, Jurgen, 4,236,980, Cl. 204-98.000.
Quack, Jochen M.; Reng, Alwin; Balzer, Juliane; Engelhardt, Friedrich; and Ribka, Joachim, 4,237,243, Cl. 525-154.000.
Springer, Hartmut, 4,237,050, Cl. 260-242.200.
Steppich, Walter; and Sartorius, Rudolf, 4,237,073, Cl. 260-604.0AC.

Hoese, Frank; von Aschwege, Gerd; and Bernardi, Herbert, to G.A.O. Gesellschaft fur Automation und Organisation mbH. Sheet collating and stacking device. 4,236,858, Cl. 414-331.000.

Hoffman, Otto-Horst: *See*—
Aichert, Hans; Hoffman, Otto-Horst; and Stephan, Herbert, 4,237,148, Cl. 427-42.000.

Hoffman, Otto L.; and Kirkpatrick, Joel L., to Gulf Oil Corporation. Dichloroacetylimino herbicide antagonists as plant protection agents. 4,237,302, Cl. 548-139.000.

Hoffman, William F.: *See*—
Cragoe, Edward J., Jr.; and Hoffman, William F., 4,237,130, Cl. 424-248.500.
Cragoe, Edward J., Jr.; and Hoffman, William F., 4,237,144, Cl. 424-270.000.

Hoffmann, Hellmut; Hammann, Ingeborg; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. Combating pests with O-ethyl-S-n-propyl-N-alkylamino-methylidene thiolphosphoric acid diester-imides. 4,237,124, Cl. 424-211.000.

Hoffmann-La Roche Inc.: *See*—
Holland, George W.; and Rosen, Perry, 4,237,060, Cl. 260-346.220.
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,237,276, Cl. 542-426.000.

Hofstetter, Franz, to AGFA-Gevaert AG. Photographic copying machine with exchangeable format masks. 4,236,817, Cl. 355-68.000.

Hoke, Donald I., to Lubrizol Corporation, The. Epoxide or episulfide polymer-based hot melt metal working lubricants. 4,237,188, Cl. 428-418.000.

Holland, George W.; and Rosen, Perry, to Hoffmann-La Roche Inc. Prostacyclin analogs. 4,237,060, Cl. 260-346.220.

Holland, George W.; Jernow, Jane L.; and Rosen, Perry, to Hoffmann-La Roche Inc. Bicyclic lactone intermediates for 16-substituted prostaglandins. 4,237,276, Cl. 542-426.000.

Holland, John M., to International Telephone and Telegraph Corporation. Apparatus for stabilizing a laser. 4,237,427, Cl. 331-94.50S.

Holland, Stephen. Electric string instrument. 4,236,433, Cl. 84-1.160.

Hollenbeck, Keith E., to Spectrex Corporation. Method and means for continuously sampling a fluid. 4,237,451, Cl. 340-606.000.

Hollingsworth, Richard J., to RCA Corporation. High performance electrically alterable read only memory (EAROM). 4,237,472, Cl. 357-43.000.

Hollis, Donald F.: *See*—
Monthony, James F.; Schwartz, Norman D.; Hollis, Donald F.; and Polastri, Gian D., 4,237,218, Cl. 435-2.000.

Holmstrand, Allan L.: *See*—
Hennenfent, Douglas J.; Johnson, Robert A.; and Holmstrand, Allan L., 4,236,355, Cl. 51-168.000.

Holowaty, Michael O.: *See*—
Bhattacharya, Debanshu; Quinto, Dennis T.; and Holowaty, Michael O., 4,236,939, Cl. 148-2.000.

Holznagel, Uwe: *See*—
Heitmann, Uwe; Steiniger, Wolfgang; Holznagel, Uwe; Kaebernick, Hartmut; Pfannmuller, Joachim; and Reuland, Joachim, 4,236,534, Cl. 131-21.00B.

Homeyer, Bernhard: *See*—
Hoffmann, Hellmut; Hammann, Ingeborg; and Homeyer, Bernhard, 4,237,124, Cl. 424-211.000.

Honeywell Inc.: *See*—
Anderson, Rogers H., 4,236,824, Cl. 356-359.000.
Chiang, Alice M., 4,237,473, Cl. 357-61.000.
Hendrickson, Thomas E., 4,236,831, Cl. 357-30.000.
Mueller, Dale A., 4,236,379, Cl. 62-126.000.

Honig, Helmut: *See*—
Pampouchidis, Georgios; and Honig, Helmut, 4,237,038, Cl. 260-29.2TN.

Hook, Dale L.; and Waypa, John, Jr., to TRW Inc. Transverse mixing hypersonic wedge nozzle chemical laser. 4,237,429, Cl. 331-94.50G.

Hoonet s.a.s. di Indro Paolo Dall' & C: *See*—
Cipriani, Tullio, 4,236,541, Cl. 134-104.000.

Hoover, Donald L. Planetary coiler especially useful for coiling textile strand material. 4,236,278, Cl. 19-159.00R.

Hoover Universal, Inc.: *See*—
Mizelle, Ned W., 4,236,260, Cl. 5-13.000.
Mizelle, Ned W., 4,236,752, Cl. 297-303.000.

Hoppen, Heinz: *See*—
Ansen, Jakob; Hoppen, Heinz; and Duill, Helmut, 4,236,886, Cl. 432-14.000.

Hoppner, Dietrich: *See*—
Rall, Bernhard; and Hoppner, Dietrich, 4,237,413, Cl. 323-4.000.

Horiba, Atushi; Saitoh, Osamu; and Ishida, Kozo, to Horiba, Ltd. Opto-acoustic gas analyzer. 4,236,827, Cl. 356-437.000.

Horiba, Ltd.: *See*—
Horiba, Atushi; Saitoh, Osamu; and Ishida, Kozo, 4,236,827, Cl. 356-437.000.

Horii, Kazuo: *See*—
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,237,232, Cl. 435-243.000.

Horiuchi, Yoshifumi: *See*—
Misaki, Hideo; Horiuchi, Yoshifumi; Matsuura, Kazuo; and Harada, Saburo, 4,237,222, Cl. 435-25.000.

Horne, John M., to Berger Traffic Markings Ltd. Bonded road studs. 4,237,191, Cl. 428-542.000.

Horsma, David A.; and Diaz, Stephen H., to Raychem Corporation. Process for preparing a hermetically sealed assembly. 4,236,949, Cl. 156-49.000.

Horvath, Tibor; Csanyi, Endre; Eckhardt, Sandor; and Kiraly nee Vida, Emilia, to Richter Gedeon Vegyeszeti Gyar RT. Bis(nitrosoureido)-polyol derivatives. 4,237,273, Cl. 536-53.000.

Hospital Communication Systems, Inc.: *See*—
Moore, John R., 4,237,344, Cl. 179-2.00A.

Houldsworth, John, to Elliott Brothers (London) Limited. Display apparatus. 4,237,457, Cl. 340-728.000.

Housman, Richard J.: *See*—
Kanjo, Wajih; Housman, Richard J.; and Natschke, Scott L., 4,236,424, Cl. 74-505.000.

Howard, Alan N. Dietary supplement and dietary methods employing said supplement for the treatment of obesity. 4,237,118, Cl. 424-140.000.

Howard, E. W. Apparatus for providing instant hot water. 4,236,548, Cl. 137-335.000.

Howard, Timothy L.: *See*—
Smith, Lawther O.; Howard, Timothy L.; and Broitman, Kalman, 4,236,845, Cl. 403-144.000.

Howell, Stephen L.; Robinson, John W.; and Kube, Donald, to Kimball International, Inc. Organ brass pulse keyer. 4,236,437, Cl. 84-1.260.

Howell, Stephen L.: *See*—
Dietrich, Ralph N.; Robinson, John W.; and Howell, Stephen L., 4,236,436, Cl. 84-1.260.

Hsieh, Henry L., to Phillips Petroleum Company. Copolymers of 1,3-cyclodienes, monovinylaromatic compounds and polyvinylaromatic hydrocarbons. 4,237,246, Cl. 525-332.000.

Huang, Marshall Y.; Grote, Albert J.; and Yen, Kuo-Hsiung, to TRW Inc. Surface acoustic wave filter with feedforward to reduce triple transit effects. 4,237,432, Cl. 333-194.000.

Hucul, Elias, Jr.; and Gladden, Robert E., to United Technologies Corporation. Turbine blade. 4,236,870, Cl. 416-97.00R.

Huempfner, David F., to American Hospital Supply Corporation. Pivot top for stretcher or the like. 4,236,261, Cl. 5-68.000.

Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, to Compagnie Internationale pour l'Informatique. Apparatus for mounting devices on a substrate. 4,236,301, Cl. 29-740.000.

Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, to Compagnie Internationale pour l'Informatique. Method for mounting devices on a substrate. 4,236,306, Cl. 29-827.000.

Huggins, Harold A.: *See*—
Woolhouse, Geoffrey R.; Huggins, Harold A.; Anderson, Stephen I.; and Scholl, Frederick R., 4,236,296, Cl. 29-583.000.

Hughes Aircraft Company: *See*—
Devendorf, Don C.; and Baskevitch, Eugene, 4,237,387, Cl. 307-203.000.
Shishido, Isuneo; Cramm, Herman W.; and Vick, William L., 4,237,431, Cl. 333-106.000.

Hughes, John F.; and Roberts, John M. C., to National Research Development Corporation. Apparatus for producing emulsions. 4,237,028, Cl. 252-359.00B.

Hughes, Richard L.; Soderstrom, Melvin A.; Vachhani, Vasantrai A.; and Weisenburger, Lawrence P., to AMP Incorporated. Terminal block. 4,236,778, Cl. 339-97.00P.

Hughes Tool Company: *See*—
Galle, Edward M., 4,236,764, Cl. 308-8.200.

Huguenin, Freddy, to Ebauches S.A. Electro-optic display device. 4,237,460, Cl. 340-756.000.

Hultman, Bengt G.; and Berglund, Erik A., to Mo och Domsjo Aktiebolag. Process for controlling the degree of causticization in the preparation of white liquid from the chemicals recovered from black liquor. 4,236,960, Cl. 162-30.00K.

Hummel, Merritt J., to PPG Industries, Inc. Reducing tin drip with sulfur containing gas. 4,236,906, Cl. 65-27.000.

Humphries, Romilly H., to S.A.Y. Industries, Inc. Container with flexible nozzle. 4,236,655, Cl. 222-465.000.

Hundemer, Peter, to Bayerische Motoren Werke Atiengesellschaft. Pressure-medium-actuated installation for adjusting the inclination of a vehicle headlight. 4,237,524, Cl. 362-71.000.

Hunt, Clifton T., Jr.: *See*—
Emme, Harry W., 4,236,741, Cl. 294-1.0BB.

Hunt, Ronald E., to International Business Machines Corporation. Cartridge sheet feed attachment. 4,236,709, Cl. 271-21.000.

Hunter Douglas International N.V.: *See*—
Frentzel, Kurt H., 4,236,567, Cl. 160-178.00R.
Hensel, Erich E., 4,236,566, Cl. 160-130.000.
Rijnders, Willem, 4,236,366, Cl. 52-580.000.

Huron Tool & Manufacturing Division of U.S. Industries, Inc.: *See*—
Oldford, William G., 4,236,289, Cl. 29-159.00R.

Husqvarna Aktiebolag: *See—*
Risman, Per O. G.; and Bengtsson, Nils E., 4,237,145, Cl. 426-241.000.
Huth, Donald L.: *See—*
Heyer, Bruce A.; and Huth, Donald L., 4,236,921, Cl. 75-134.00F.
Hycel, Inc.: *See—*
Sommervold, David E., 4,236,894, Cl. 23-230.00R.
Iacono, Frederick D.; and Danielle, Louis, to Kings Electronics Co., Inc. Optical fiber connector. 4,236,787, Cl. 350-96.210.
Iida, Takao; Ozaki, Sho; and Kotaka, Toshihiko, to Daiwa Kasei Kabushiki Kaisha. Novel lactase. 4,237,230, Cl. 435-207.000.
Ikeda, Masako: *See—*
Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, 4,237,141, Cl. 424-267.000.
Ikeda, Tomoaki: *See—*
Nahara, Akira; Wada, Minoru; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,237,468, Cl. 346-135.100.
Ikeda, Tsuneo; and Nunogawa, Yasuhiro, to Hitachi, Ltd. Monolithic semiconductor integrated circuit for television receivers. 4,237,487, Cl. 358-154.000.
Ikenoue, Shinpei; and Masuda, Takao, to Fuji Photo Film Co., Ltd. Heat-developable light-sensitive material. 4,237,215, Cl. 430-619.000.
Illinois Tool Works Inc.: *See—*
Dewey, George G., 4,236,555, Cl. 144-32.000.
Imai, Ichiro: *See—*
Nambu, Hirohiko; Hashimoto, Isao; and Imai, Ichiro, 4,237,319, Cl. 568-571.000.
Imai, Kishio, to Sanyo Kiki Kabushiki Kaisha. Lockable pin. 4,236,439, Cl. 85-5.0CP.
Imanari, Makoto: *See—*
Kitagawa, Sadao; Okada, Isao; Saito, Teruo; Masukawa, Shoichi; Watanabe, Yoshihisa; and Imanari, Makoto, 4,237,254, Cl. 526-122.000.
Immer, Hans U.: *See—*
Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., 4,237,045, Cl. 260-112.50R.
Imperial Chemical Industries Limited: *See—*
Kennedy-Skipton, Henry K., 4,236,849, Cl. 405-261.000
Krause, Janusz J. H.; and Stanier, Colin, 4,236,952, Cl. 156-93.000.
Singer, Michael; and Tury, Bernard, 4,237,019, Cl. 252-47.500.
Tomka, Jiri; and Ginn, Jack M., 4,237,034, Cl. 260-18.00N.
Imral, Sadik S.; and Khan, Asadulla R., to Intertherm Inc. Suction-liquid heat exchanger having accumulator and receiver. 4,236,381, Cl. 62-324.000.
Imura, Toshinori: *See—*
Hayashi, Toshio; and Imura, Toshinori, 4,236,796, Cl. 354-145.000.
Industrial Sheet Metal & Mechanical Corp.: *See—*
Fisher, Gary H., 4,236,537, Cl. 131-134.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Guerrini, Giampaolo, 4,236,838, Cl. 400-144.300.
Ingle, Donald L., to American Cyanamid Company. Antibacterial agent BM123-gamma, pharmaceutically acceptable salts, complexes and alkylated derivatives as animal food additives. 4,237,120, Cl. 424-181.000.
Ingraham, Glen E., to Colorguard Corporation. Thermoplastic resin-coated metallic substrate and the method of producing the same. 4,237,186, Cl. 428-379.000.
Inland Steel Company: *See—*
Bhattacharya, Debanshu; Quinto, Dennis T.; and Holowaty, Michael O., 4,236,939, Cl. 148-2.000.
Inohara, Masanobu, to Asics Corporation. Sport shoe sole. 4,236,326, Cl. 36-29.000.
Inoue, Eiichi; Takeda, Misturu; and Shimada, Fumio, to Dai Nippon Insatu Kabushiki Kaisha. Process for forming images. 4,237,212, Cl. 430-346.000.
Inoue, Tsutomu, to Takara Co., Ltd. Toy assembly with selective propulsion of subcomponent parts. 4,236,345, Cl. 46-44.000.
Instance, Michael M., to E-Comm Australia Pty. Ltd. Plug-in module for touch control switching. 4,237,386, Cl. 307-116.000.
Institut Pasteur: *See—*
Popoff, Michel; Brochon, Marie-Jose; and Brault, Georges, 4,237,096, Cl. 422-102.000.
Interflex Datensysteme GmbH & Co. K.G., Firma: *See—*
Granholm, Carl, 4,237,375, Cl. 235-487.000.
Interlock Sicherheitssysteme GmbH, Firma: *See—*
Granholm, Carl, 4,237,375, Cl. 235-487.000.
Intermedics, Inc.: *See—*
Sluetz, James E.; and Calfee, Richard V., 4,236,525, Cl. 128-419.00P.
International Business Machines Corporation: *See—*
Aboaf, Joseph A.; Cuomo, Jerome J.; Gangulee, Amitava; and Kobliska, Robert J., 4,236,946, Cl. 148-108.000.
Anantha, Narasipur G.; Bhatia, Harsaran S.; and Walsh, James L., 4,236,294, Cl. 29-578.000.
Cukier, Maurice, 4,237,542, Cl. 364-900.000.
Hafer, Cameron H.; and Wilbur, Clayton V., 4,236,834, Cl. 400-120.000.
Hunt, Ronald E., 4,236,709, Cl. 271-21.000.
Lantz, Robert H.; and Schwartz, Alfred A., 4,237,458, Cl. 340-739.000.
Mills, Phillip R.; Luiz, Fernando A.; and Sorg, John H., Jr., 4,237,533, Cl. 364-200.000.
Schlig, Eugene S., 4,236,830, Cl. 357-24.000.
Sienkiewicz, Gerald C.; McQuade, Donal J.; and Leonard, Herbert G., 4,236,678, Cl. 242-55.19A.
Skarvinko, Eugene R., 4,237,216, Cl. 430-280.000.
Thompson, David A., 4,237,522, Cl. 361-392.000.
International Harvester Company: *See—*
Schillings, Dieter, 4,236,724, Cl. 280-460.00A.
International Platex, Inc.: *See—*
Williams, Harvey F.; Cole, Raymond C.; and Donaghy, James G., 4,236,257, Cl. 2-406.000.
International Standard Electric Corporation: *See—*
Head, Brian E., 4,236,908, Cl. 65-108.000.
Ruzic, Hugo, 4,237,350, Cl. 179-103.000.
International Telephone and Telegraph Corporation: *See—*
Dishal, Milton, 4,237,555, Cl. 455-108.000.
Holland, John M., 4,237,427, Cl. 331-94.50S.
Steensma, Peter D., 4,237,550, Cl. 370-4.000.
Interstate Folding Box Company, The: *See—*
Nerenberg, Robert W.; and Shiverdecker, James H., 4,236,368, Cl. 53-491.000.
Intertherm Inc.: *See—*
Imral, Sadik S.; and Khan, Asadulla R., 4,236,381, Cl. 62-324.000.
Intimate Jewels Inc.: *See—*
Block, Alvin, 4,236,385, Cl. 63-12.000.
Inukai, Sumitaka; and Azuma, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Toner concentration control device. 4,236,485, Cl. 118-690.000.
Inventec Licensing BV: *See—*
Luff, Brian A.; and Hickman, Ronald P., 4,236,599, Cl. 182-33.000.
Iowa State University Research Foundation, Inc.: *See—*
Kraus, George A., 4,237,057, Cl. 260-343.30R.
Ireland, Leonard: *See—*
Hetherington, Ross W.; Armstrong, Kenneth J.; Ireland, Leonard; Canty, John; and Banfield, Ernest R., 4,236,305, Cl. 29-774.000.
Isachsen, Henning, to Deere & Company. Rear furrow wheel locking structure for disk tillers and the like. 4,236,584, Cl. 172-385.000.
Isaka, Tutomu: *See—*
Yoshimura, Shohei; and Isaka, Tutomu, 4,237,088, Cl. 264-235.800.
Isakova, Roalda B.: *See—*
Grodzinsky, Eduard Y.; Isakova, Roalda B.; Zubatova, Lidia S.; Makonovitskaya, Anna T.; and Grinberg, Aron K., 4,236,985, Cl. 204-129.430.
Ishibashi, Yoshiaki: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.
Ishida, Hideaki: *See—*
Ito, Takehiko; Hirose, Yusuke; and Ishida, Hideaki, 4,237,192, Cl. 428-659.000.
Ishida, Kozo: *See—*
Horiba, Atushi; Saitoh, Osamu; and Ishida, Kozo, 4,236,827, Cl. 356-437.000.
Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,236,392, Cl. 68-5.00E.
Ishii, Yasuo: *See—*
Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, 4,237,141, Cl. 424-267.000.
Ishimaru, Toshiaki; Nishizawa, Hiroshi; and Osada, Yuichi, to Hitachi Chemical Company, Ltd. Polyesteramides and process for producing the same. 4,237,251, Cl. 525-440.000.
Ishizuka, Seiichi: *See—*
Bannai, Kiyoshi; Ohnuma, Norio; Ishizuka, Seiichi; Kubo, Junji; and Naruchi, Tatuyuki, 4,237,125, Cl. 424-236.000.
Ismailova, Zemfira A. B. K.: *See—*
Aliev, Sakhib M. O.; Aliev, Vagab S.; Agaeva, Magira A. K.; Gadzhiev, Tofik A.; Guseinov, Vagif B. G. O.; and Ismailova, Zemfira A. B. K., 4,237,041, Cl. 260-33.6UA.
Isoya, Toshiro: *See—*
Yamataka, Kazunori; Matsuoka, Yuuji; and Isoya, Toshiro, 4,237,317, Cl. 562-590.000.
Italsider, S.p.A.: *See—*
Azzerri, Nazzareno; and Milanese, Giovanni, 4,236,977, Cl. 204-29.000.
Ito, Higashi; and Watanabe, Seiichi, to Denkyi Kagaku Kogyo Kabushiki Kaisha. Isomerization of dichlorobutenes. 4,237,074, Cl. 260-654.00R.
Ito, Kazuhiko: *See—*
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, 4,236,901, Cl. 55-276.000.
Ito, Nobuo: *See—*
Takagi, Shoji; and Ito, Nobuo, 4,236,540, Cl. 132-40.000.
Ito, Takehiko; Hirose, Yusuke; and Ishida, Hideaki, to Nisshin Steel Co., Ltd. Zinc plated steel plate and can produced from the same. 4,237,192, Cl. 428-659.000.
Ito, Teruyoshi: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.
Ito, Yoshikazu: *See—*
Sunakoda, Katsuaki; and Ito, Yoshikazu, 4,236,606, Cl. 188-1.00B.
Itoh, Hitoshi: *See—*
Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki, 4,237,266, Cl. 536-1.000.
Itoh, Masamitsu: *See—*
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,237,232, Cl. 435-243.000.

ITT Industries, Inc.: *See*—
Haar, Lucas H.; and Schafer, Ernst-Dieter, 4,236,760, Cl. 303-6.00C.
Mutschler, Erich; Prohaska, Hans; and Weber, Adam, 4,237,529, Cl. 362-272.000.
Iwabuchi, Kiyoshi, to Dai-Ich Seiko Co., Ltd. Valve for pneumatic tires. 4,236,565, Cl. 152-427.000.
Iwao, Noriaki, to Tomy Kogyo Co., Inc. Toy having a seemingly random movement. 4,236,346, Cl. 46-104.000.
J. I. Case Company: *See*—
Cochran, Gary L.; Wilson, Charles D.; and Klee, Maurice, 4,236,422, Cl. 74-470.000.
Schmitz, Floyd A., 4,236,643, Cl. 212-145.000.
Jackson, Denise M.; and Tsuda, Yoshihisa, to UOP Inc. Method of purifying glucose isomerase and a composition for storing same. 4,237,231, Cl. 435-234.000.
Jackson, Melvin R.; and Rairden, John R., III, to General Electric Company. Oxidation corrosion resistant superalloys and coatings. 4,237,193, Cl. 428-678.000.
Jacobson, Allan J.: *See*—
Thompson, Arthur H.; Symon, Charles R.; and Jacobson, Allan J., 4,237,204, Cl. 429-194.000.
Jacobus, David P.: *See*—
Gillin, James; and Jacobus, David P., 4,237,116, Cl. 424-117.000.
Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, to L'Oreal. Copolymers, their process of preparation, and cosmetic compounds containing them. 4,237,253, Cl. 526-75.000.
Jager, Heinz. Heat exchanger with preliminary calcining. 4,236,888, Cl. 432-106.000.
Jahnke, Otto C.: *See*—
Payne, David A.; Park, Sang M.; and Jahnke, Otto C., 4,237,084, Cl. 264-61.000.
Jamesbury Corporation: *See*—
Wright, Joseph B., 4,236,691, Cl. 251-315.000.
Jannes Reinders & Noord-Nederlandache Machinefabriek B. V.: *See*—
Reinders, Jannes, 4,236,744, Cl. 294-88.000.
Janome Sewing Machine Co. Ltd.: *See*—
Eguchi, Yasukata, 4,236,468, Cl. 112-158.00E.
Takenoya, Hideaki; and Makabe, Hachiro, 4,236,469, Cl. 112-158.00E.
Tanaka, Yoshikazu; and Eguchi, Yasukata, 4,236,467, Cl. 112-158.00F.
Japan Exlan Company Limited: *See*—
Kobashi, Toshiyuki; Ozaki, Masahiko; and Abe, Noboru, 4,237,256, Cl. 526-229.000.
Jaretsky, Michael G.; and Lax, Michael, to Baker Industries, Inc. Fire detector housing. 4,236,822, Cl. 356-256.000.
Jarre, Wolfgang; and Wurmb, Rolf, to BASF Aktiengesellschaft. Hydrophobic polyurethane foams, their manufacture and use. 4,237,237, Cl. 521-128.000.
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Jaskowski, Michael C. Insulation material and process for making the same. 4,237,180, Cl. 428-280.000.
Jean Walterscheid GmbH: *See*—
Geisthoff, Hubert, 4,236,388, Cl. 64-23.000.
Geisthoff, Hubert, 4,236,420, Cl. 74-380.000.
Jenaer Glaswerk Schott & Gen.: *See*—
Gutmann, Gunter; Kistrup, Holger; Bauchk, Friedrich G. K.; and M/ler, Gerd, 4,237,196, Cl. 429-50.000.
Jenkins, Allan L.: *See*—
Lewis, Michael; and Jenkins, Allan L., 4,236,267, Cl. 9-1.700.
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Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,237,276, Cl. 542-426.000.
Jespersen, Paul W., to Georgia-Pacific Corporation. Flexible sheet material roll dispensing. 4,236,679, Cl. 242-55.530.
Jesson, Joseph E.: *See*—
Larson, Willis A.; Vannice, Steven D.; and Jesson, Joseph E., 4,237,358, Cl. 200-159.00B.
JLG Industries, Inc.: *See*—
Grove, John L., 4,236,861, Cl. 414-540.000.
Joekel, Alfred; Langen, Hans; and Denner, Peter, to Balke-Durr Aktiengesellschaft. Method and device for winding spiral fins onto oval tubing. 4,236,299, Cl. 29-727.000.
Joh, Yasushi: *See*—
Yamazaki, Masahiro; Makuta, Yoshihiro; Joh, Yasushi; and Kaneko, Noriaki, 4,237,013, Cl. 210-321.00B.
Johannesen, Donald D., to Bendix Corporation, The. Drum brake having parking mechaism. 4,236,614, Cl. 188-326.000.
Johansson, Karl-Erik: *See*—
Lampe, Vaino; Gunnarsson, Staffan H.; and Johansson, Karl-Erik, 4,236,920, Cl. 75-128.00A.
Johnson Controls Inc.: *See*—
Colla, Jeannine O.; and Thoma, Paul E., 4,236,307, Cl. 29-857.000.
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Bunting, John G.; Cross, Robin C.; Guard, David R.; Groves, Ian S.; Johnson, Edward G. T.; and Stevens, Alan E., 4,237,339, Cl. 179-1.0CN.
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Van Twuyver, Robert; and Johnson, James M., 4,236,276, Cl. 17-48.000.
Johnson, John L. B. Grain thrasher. 4,236,530, Cl. 130-27.00R.
Johnson, Marguerite A.: *See*—
Bakewell, Henry P., Jr.; and Johnson, Marguerite A., 4,236,401, Cl. 73-1.0DV.
Johnson, Matthey & Co., Limited: *See*—
Evans, William D. J.; Larbey, Robert J.; and Stewart, Thomas I., 4,237,032, Cl. 252-462.000.
Johnson, Michael R.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,237,133, Cl. 424-248.520.
Johnson Products Co., Inc.: *See*—
Selega, Zbigniew J.; Khalil, Ezzat N.; and McKavanagh, Gloria M., 4,237,112, Cl. 424-70.000.
Johnson, Robert A.: *See*—
Hennenfent, Douglas J.; Johnson, Robert A.; and Holmstrand, Allan L., 4,236,355, Cl. 51-168.000.
Johnson, Roy A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-trans-2,3,4,5-tetradehydro-9-deoxy-5,9α-epoxy-PGF_1 compounds. 4,237,059, Cl. 260-345.200.
Johnson, Roy A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-9-deoxy-5,9α-epoxy-4,5-didehydro-PGF_1. 4,237,277, Cl. 542-426.000.
Johnson, Timothy E.; and Giuffrida, John, to Massachusetts Institute of Technology; and Cabot Corporation. Aqueous heat-storage compositions containing fumed silicon dioxide and having prolonged heat-storage efficiencies. 4,237,023, Cl. 252-70.000.
Johnston Brothers (Engineering) Limited: *See*—
Hirst, Peter B.; and Duthie, Anthony J., 4,236,871, Cl. 416-186.00R.
Johnston, Howard; Troxell, Lillian H.; and Claus, Jon S., to Dow Chemical Company, The. Quinolinyloxyphenoxy and quinolyinylthiophenoxy alkanoic acids and derivatives thereof and methods of herbicidal use. 4,236,912, Cl. 71-94.000.
Johnston, Ian F. Fuel pellets. 4,236,897, Cl. 44-10.00A.
Jones, Alan P., to Brandt-Pra, Inc. Photoelectric apparatus for document counting and overlap detection. 4,237,378, Cl. 250-223.000.
Jones, Donald B., to Armstrong Cork Company. Method of embossing wood composition board. 4,237,087, Cl. 264-134.000.
Jones, Robert H. Wild stress relief power supply apparatus. 4,237,369, Cl. 219-503.000.
Jones, Robert J., to TRW Inc. Curable aliphatic epoxy-polimide compositions. 4,237,262, Cl. 528-322.000.
Jones, Roy. Aircraft glide path teaching aid. 4,236,324, Cl. 35-12.00B.
Jones & Vining, Incorporated: *See*—
Gorsche, Robert D.; and Cloutier, Oscar H., 4,236,327, Cl. 36-14.000.
Jongeward, John H. Suspension system for writing implements. 4,236,841, Cl. 401-131.000.
Jost, Karel: *See*—
Cort, Joseph H.; Barth, Tomislav; Jost, Karel; and Veznik, Zdenek, 4,237,119, Cl. 424-177.000.
Julius Blum Gesellschaft m.b.H.: *See*—
Rock, Erich; and Mages, Bernhard, 4,236,848, Cl. 403-406.000.
Jurgens, Gunter R.; and Helal, Mohammed A., to Minitronics Pty, Ltd. Control of power supply. 4,237,385, Cl. 307-66.000.
K & S Industries, Inc.: *See*—
Cayou, James S., 4,236,309, Cl. 30-276.000.
Kabakov, Genrikh I.: *See*—
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.
Kabbe, Hans-Joachim; Widdig, Arno; Stendel, Wilhelm; and Roessler, Peter, to Bayer Aktiengesellschaft. Combating arthropods with 2-and 4-substituted-chromanes. 4,237,162, Cl. 424-283.000.
Kabel-und Metallwerke Gutehoffnungshuette AG: *See*—
Rohner, Peter, 4,236,288, Cl. 29-157.30H.
Kabushiki Kaisha Daini Seikosha: *See*—
Komaki, Shojiro, 4,236,375, Cl. 58-23.00R.
Kabushiki Kaisha Fuji Seisakusho: *See*—
Kimura, Yoshimi, 4,236,334, Cl. 40-378.000.
Kabushiki Kaisha Kawai Sakki Susakusho: *See*—
Nishibe, Koji, 4,236,434, Cl. 84-1.190.
Kabushiki Kaisha Mitutoyo Seisakusho: *See*—
Nakaya, Tadao; and Kobashi, Takashi, 4,236,481, Cl. 116-292.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kawaura, Kouichi, 4,236,279, Cl. 19-159.00R.
Mukai, Takamitu; Fujii, Tomoo; and Kouno, Hiroya, 4,236,621, Cl. 192-82.00T.
Kaebernick, Hartmut: *See*—
Heitmann, Uwe; Steiniger, Wolfgang; Holznagel, Uwe; Kaebernick, Hartmut; Pfannmuller, Joachim; and Reuland, Joachim, 4,236,534, Cl. 131-21.00B.
Kaga, Takashi, to Tomy Kogyo Co., Inc. Amusement device. 4,236,718, Cl. 273-153.00R.
Kahn, Marvin L.; and Eapen, Kuttikandathil E., to Rich Products Corporation. Freezer soft intermediate-moisture food dressing. 4,237,146, Cl. 426-330.000.
Kakita, Minoru; and Kosugi, Tsuneo, to Victor Company of Japan, Limited. Keying system in an electronic musical instrument. 4,236,435, Cl. 84-1.220.
Kalafus, Edward F.; and Sharma, Satish C., to General Tire & Rubber Company, The. Rubber-free phenol-formaldehyde adhesive for bonding bright steel to rubber. 4,236,564, Cl. 152-359.000.
Kalfoglou, George, to Texaco Inc. Modified lignosulfonates as additives in oil recovery processes involving chemical recovery agents. 4,236,579, Cl. 166-274.000.

Kali-Chemie Pharma GmbH: *See*—
Hachmeister, Bernd, 4,237,295, Cl. 546-63.000.
Kallman Research Corporation: *See*—
Kallman, Robert A., 4,236,658, Cl. 224-250.000.
Kallman, Robert A., to Kallman Research Corporation. System for holding articles to objects. 4,236,658, Cl. 224-250.000.
Kama, Haruo: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.
Kamino, Kimiyuki, to Mitsubishi Seiko Kabushiki Kaisha. Magnetic alloy. 4,236,919, Cl. 75-126.00H.
Kamiya, Minoru. Solid slide fastener capable of effecting strong union. 4,236,284, Cl. 24-205.13R.
Kamiya, Takashi; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; and Takeno, Hidekazu, to Fujisawa Pharmaceutical Co., Ltd. Substituted phenylacetic acid compounds and process for preparation thereof. 4,237,305, Cl. 560-29.000.
Kamiyama, Setsuo; Nagashima, Yukio; Furukawa, Hiroshi; and Kaneko, Katsumi, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the production of alkylbenzenes. 4,237,329, Cl. 585-474.000.
Kamo, Hideo: *See*—
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, 4,236,901, Cl. 55-276.000.
Kanagawa, Shuichi; Kawakami, Kazunori; and Shintani, Akira, to Sumitomo Chemical Company, Limited. Epoxy resin from by-product tar from resorcinol process and use thereof. 4,237,035, Cl. 260-28.00R.
Kanatani, Yoshiharu, to Sharp Kabushiki Kaisha. Drive system for a thin-film EL display panel. 4,237,456, Cl. 340-719.000.
Kane, Vinayak V., to Ortho Pharmaceutical Corporation. Total synthesis of the utero-evacuant substance d,l-zoapatanol. 4,237,053, Cl. 260-333.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Yamada, Hideaki; Takahashi, Satomi; and Yoneda, Koji, 4,237,227, Cl. 435-108.000.
Kaneko, Katsumi: *See*—
Kamiyama, Setsuo; Nagashima, Yukio; Furukawa, Hiroshi; and Kaneko, Katsumi, 4,237,329, Cl. 585-474.000.
Kaneko, Nobutaka; and Fujimori, Ryo, to Olympus Optical Co., Ltd. Method for calibrating densitometer of cataphoretic apparatus and calibration film for use in such calibrating method. 4,236,828, Cl. 356-444.000.
Kaneko, Noriaki: *See*—
Yamazaki, Masahiro; Makuta, Yoshihiro; Joh, Yasushi; and Kaneko, Noriaki, 4,237,013, Cl. 210-321.00B.
Kanemura, Tom T., to Champion International Corporation. Solenoid clutch mechanism. 4,236,660, Cl. 226-95.000.
Kangol Magnet Limited: *See*—
Pollitt, John M.; and Nicod, Frederick, 4,236,755, Cl. 297-483.000.
Kanjo, Wajih; Housman, Richard J.; and Natschke, Scott L., to American Standard Inc. Hand brake for railway vehicles. 4,236,424, Cl. 74-505.000.
Kankaanpa , Matti, to Valmet Oy. Method and apparatus for separating a web from a former wire and transferring the web to a press felt. 4,236,962, Cl. 162-204.000.
Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Murakami, Takeshi; Oeda, Yoshitaka; Hayashi, Hiroo; and Nakamura, Teruo, 4,236,732, Cl. 282-27.500.
Kao, Jar-Lin: *See*—
Sheng, Ming N.; and Kao, Jar-Lin, 4,237,314, Cl. 562-496.000.
Kaplan, Alan, to Emkay Manufacturing Company. Crystal plating apparatus. 4,236,487, Cl. 118-723.000.
Kappes, Werner: *See*—
Aeschlimann, Hans-Peter; Schmidhuber, Volker; and Kappes, Werner, 4,236,666, Cl. 233-26.000.
Karasawa, Tadahiko: *See*—
Uno, Hitoshi; Nagai, Yasutaka; Karasawa, Tadahiko; and Furukawa, Kiyoshi, 4,237,135, Cl. 424-250.000.
Kardouche, Nabil G., to Procter & Gamble Company, The. Articles and methods for treating fabrics. 4,237,155, Cl. 427-242.000.
Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Mista, Kresimir, 4,236,739, Cl. 289-2.000.
Karl Otto Braun KG: *See*—
Braun, Franz; and Schafer, Ewald, 4,236,550, Cl. 139-421.000.
Karlshamns Oljefabriker: *See*—
Andlid, Sune; and Linden, Lennart, 4,237,021, Cl. 252-49.500.
Karp, Arthur, to Varian Associates, Inc. Slow-wave circuit for traveling-wave tubes. 4,237,402, Cl. 315-3.500.
Karpal, David L., to Teledyne Industries, Inc. Aircraft battery. 4,237,202, Cl. 429-120.000.
Karrer, Friedrich: *See*—
Rody, Jean; and Karrer, Friedrich, 4,237,297, Cl. 546-189.000.
Kartavtsev, Viktor M.; Posleider, Grigory Y.; Bytsak, Vladimir S.; and Bukhteev, Pavel I. Armature winding machine. 4,236,300, Cl. 29-736.000.
Kasabell Industries: *See*—
Saia, Carman R., 4,236,342, Cl. 43-17.600.
Kasper Instruments, Inc.: *See*—
Szasz, Peter R., 4,236,851, Cl. 406-72.000.
Katagiri, Shigenobu: *See*—
Matsuzaki, Kazuo; Katagiri, Shigenobu; and Nakano, Hiroshige, 4,236,447, Cl. 101-93.140.
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Air cleaner with secondary air filter element. 4,236,901, Cl. 55-276.000.
Katz, Laurence B. Novel anti-inflammatory composition. 4,237,159, Cl. 424-274.000.
Katzfey, James M., to Pellerin Milnor Corporation. Continuous tunnel batch washer. 4,236,393, Cl. 68-27.000.
Kaukanen, Esko: *See*—
Suovaniemi, Osmo A.; Ekholm, Pertti; and Kaukanen, Esko, 4,237,094, Cl. 422-100.000.
Kawakami, Hideo; Endo, Masami; and Yamazaki, Fumio, to Toshiba Kikai Kabushiki Kaisha. Fret saw blade having saw-teeth provided with sets and an automatic fret sawing machine having the fret saw blade. 4,236,432, Cl. 83-848.000.
Kawakami, Kazunori: *See*—
Kanagawa, Shuichi; Kawakami, Kazunori; and Shintani, Akira, 4,237,035, Cl. 260-28.00R.
Kawamura, Hideo; Fukami, Ichiro; Wada, Shuhei; and Yoshikawa, Fusayuki, to Nippon Ester Co., Ltd. Process for continuously producing polyester and spun fiber. 4,237,261, Cl. 528-272.000.
Kawamura, Masaharu: *See*—
Uchidoi, Masanori; Kawamura, Masaharu; Shigeta, Yoshihiro; Sugiura, Yoji; Yamamoto, Hiroshi; and Tezuka, Nobuo, 4,236,802, Cl. 354-268.000.
Kawaura, Kouichi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Planetary coiler. 4,236,279, Cl. 19-159.00R.
Kayhko, Jussi J.: *See*—
Makipirtti, Simo A. I.; and Kayhko, Jussi J., 4,236,700, Cl. 266-161.000.
Keck, Donald B., to Corning Glass Works. Method of effecting coupling of selected modes in an optical waveguide. 4,236,786, Cl. 350-96.150.
Keddie, Burton G. Picture frame making tool. 4,236,702, Cl. 269-41.000.
Keeley, Donald E., to General Electric Company. Organic materials having meta, para-isopropylidene diphenoxy units and method. 4,237,259, Cl. 528-204.000.
Kellis, James T., to Lear Siegler, Inc. Method and apparatus for conserving energy. 4,237,405, Cl. 315-307.000.
Kelly, William J., to Mattel, Inc. Toy with spring-operated speed regulated motor mechanism. 4,236,344, Cl. 46-40.000.
Kelm, Edward C.: *See*—
Kurtin, Stephen L.; and Kelm, Edward C., 4,237,343, Cl. 179-1.00J.
Kemp, Wayne T., to Raytheon Company. Grate with adjustable vents. 4,236,503, Cl. 126-215.000.
Kenki Kagaku Keiki Co., Ltd.: *See*—
Nishikawa, Akikazu, 4,237,417, Cl. 324-118.000.
Kennedy, Michael D. Internal reservoired soap dispensing animal washer. 4,236,840, Cl. 401-42.000.
Kennedy-Skipton, Henry K., to Imperial Chemical Industries Limited. Method of grouting a drill hole. 4,236,849, Cl. 405-261.000.
Kennon, Woodrow A. Wind turbine means. 4,237,384, Cl. 290-55.000.
Kent, William F.: *See*—
West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., 4,236,885, Cl. 425-514.000.
Kephart, Richard E., to Brennan, H. George. Precision photographic documentation apparatus. 4,236,795, Cl. 354-80.000.
Kermisch, Dorian, to Xerox Corporation. Low resolution correction apparatus and method for electrophotographic copiers. 4,236,809, Cl. 355-4.000.
Kerr, Barbara P., to Cole, Elsa D., a part interest. Solar cooker and method of assembly. 4,236,508, Cl. 126-451.000.
Kerr-McGee Corporation: *See*—
Morris, Alan J.; and Rado, Theodore A., 4,236,896, Cl. 23-293.00R.
Kerr, Thomas R. Competitive word game. 4,236,719, Cl. 273-265.000.
Ketchum, Marshall D.; and Yerman, Alexander J., to General Electric Company. Device for monitoring dissolved gases in electrical insulating liquids such as transformer oils. 4,236,404, Cl. 73-19.000.
Ketelsen, Broder, to Fischer & Porter Co. Electromagnetic flowmeter. 4,236,411, Cl. 73-194.0EM.
Khalil, Ezzat N.: *See*—
Selega, Zbigniew J.; Khalil, Ezzat N.; and McKavanagh, Gloria M., 4,237,112, Cl. 424-70.000.
Khan, Asadulla R.: *See*—
Imral, Sadik S.; and Khan, Asadulla R., 4,236,381, Cl. 62-324.000.
Khramov, Dmitry A.: *See*—
Savin, Nikolai I.; Khramov, Dmitry A.; Filippov, Vladimir J.; and Bugrov, Valery V., 4,236,966, Cl. 176-30.000.
Kibun Company Limited: *See*—
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,237,232, Cl. 435-243.000.
Kiehl, Jean-Pierre; Remi, Jean-Pierre; and Schoennahl, Jacques R. P., to Societe Europeenne des Produits Refractaires. Gas-permeable refractory parts. 4,236,931, Cl. 106-64.000.
Kiene, Wilfried: *See*—
Appel, Eggert; Geisler, Gottfried; Kiene, Wilfried; and Nissen, Peter, 4,236,410, Cl. 73-194.0EM.
Kiener, Volker: *See*—
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, 4,237,318, Cl. 562-609.000.
Kieslich, Klaus, to Schering, Aktiengesellschaft. Process for preparing 9α-hydroxy-4-androstene-3,17-dione. 4,237,220, Cl. 435-58.000.
Kimball International, Inc.: *See*—
Dietrich, Ralph N.; Robinson, John W.; and Howell, Stephen L., 4,236,436, Cl. 84-1.260.
Howell, Stephen L.; Robinson, John W.; and Kube, Donald, 4,236,437, Cl. 84-1.260.

Kimura, Yoshimi, to Kabushiki Kaisha Fuji Seisakusho. Rotary type information retrieving machine. 4,236,334, Cl. 40-378.000.
King, Arthur S. Treater with self-cleaning electrodes. 4,236,990, Cl. 204-275.000.
King, William F.; and Wheeler, Ronald E., to Chevron Research Company. Substituted oxadiazoles and their use as corn root worm insecticides. 4,237,121, Cl. 424-200.000.
Kings Electronics Co., Inc.: *See*—
Iacono, Frederick D.; and Danielle, Louis, 4,236,787, Cl. 350-96.210.
Kinoshita, Sakae: *See*—
Kojima, Takeshi; Kinoshita, Sakae; and Takeuchi, Kenzo, 4,237,334, Cl. 174-25.00R.
Kiraly nee Vida, Emilia: *See*—
Horvath, Tibor; Csanyi, Endre; Eckhardt, Sandor; and Kiraly nee Vida, Emilia, 4,237,273, Cl. 536-53.000.
Kirkpatrick, Joel L.: *See*—
Hoffman, Otto L.; and Kirkpatrick, Joel L., 4,237,302, Cl. 548-139.000.
Kise, Yoshio: *See*—
Matoba, Yasuo; Kise, Yoshio; Yamada, Nobuo; Hashimoto, Akira; and Nakata, Tetsuya, 4,237,248, Cl. 525-335.000.
Kiss, Sandor; and Nagy, Zsolt, to Futober Epuletgepeszeti Termekeket Gyarto Vallalat. Sound-absorbing device, especially for damping of noises expanding in air ducts. 4,236,597, Cl. 181-224.000.
Kissel, Gerhard K., to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Steering mechanism with an active force feedback, especially for aircraft. 4,236,685, Cl. 244-83.00D.
Kistrup, Holger: *See*—
Gutmann, Gunter; Kistrup, Holger; Bauchk, Friedrich G. K.; and M/ler, Gerd, 4,237,196, Cl. 429-50.000.
Kitagawa, Sadao; Okada, Isao; Saito, Teruo; Masukawa, Shoichi; Watanabe, Yoshihisa; and Imanari, Makoto, to Mitsubishi Petrochemical Company Limited. Process for producing olefin polymers. 4,237,254, Cl. 526-122.000.
Kitamura, Minoru; Hayashi, Tsutomu; Moritsugi, Takeharu; and Saruwatari, Mitsuyoshi. Desulfurization composition for molten pig iron. 4,236,914, Cl. 75-58.000.
Kitano, Yutaka: *See*—
Oishi, Kazuaki; Nakano, Seizo; and Kitano, Yutaka, 4,237,520, Cl. 361-335.000.
Kitchen, Harry E.: *See*—
Zevgolis, Victoria H.; and Kitchen, Harry E., 4,237,372, Cl. 235-92.0GA.
Kittel, Hilmar: *See*—
Meining, Hans; Pfaller, Egon; Winkler, Otmar; and Kittel, Hilmar, 4,236,766, Cl. 308-15.000.
Kittel, Horst: *See*—
Zwintscher, Wolfgang; Kittel, Horst; and Ruge, Hinrich, 4,237,361, Cl. 219-76.100.
Kiuchi, Hiroshi: *See*—
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,237,232, Cl. 435-243.000.
Klee, Maurice: *See*—
Cochran, Gary L.; Wilson, Charles D.; and Klee, Maurice, 4,236,422, Cl. 74-470.000.
Klein, Herbert H., to Unarco Industries, Inc. Connector assembly for a storage rack. 4,236,642, Cl. 211-207.000.
Klingbeil, Karl. Magician's walking cane snake. 4,236,711, Cl. 272-8.00R.
Klipsch and Associates, Inc.: *See*—
Klipsch, Paul W., 4,237,340, Cl. 179-1.00D.
Klipsch, Paul W., to Klipsch and Associates, Inc. Crossover network for optimizing efficiency and improving response of loudspeaker system. 4,237,340, Cl. 179-1.00D.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Herchenbach, Horst; and Lechner, Bartl, 4,236,932, Cl. 106-100.000.
Tholen, Paul, 4,236,492, Cl. 123-119.0CD.
Klockner-Humboldt-Wedag AG: *See*—
Ansen, Jakob; Hoppen, Heinz; and Duill, Helmut, 4,236,886, Cl. 432-14.000.
Melcher, Gerhard; and Weigel, Horst, 4,236,916, Cl. 75-85.000.
Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., to Hercules Incorporated. Use of radiation-induced polymers as friction reducing agents. 4,236,545, Cl. 137-13.000.
Knight, John H., to Superior Oil Company, The. Separation of nahcolite from oil shale by infrared sorting. 4,236,640, Cl. 209-587.000.
Knothe, Erich; and Melcher, Franz-Josef, to Sartorius GmbH. Balance with compensated loading and reference systems. 4,236,590, Cl. 177-200.000.
Knyazev, Vladimir A.: *See*—
Kostjukov, Nikolai S.; Minakov, Nikolai V.; and Knyazev, Vladimir A., 4,237,336, Cl. 174-151.000.
Kobashi, Takashi: *See*—
Nakaya, Tadao; and Kobashi, Takashi, 4,236,481, Cl. 116-292.000.
Kobashi, Toshiyuki; Ozaki, Masahiko; and Abe, Noboru, to Japan Exlan Company Limited. Process for producing an acrylonitrile polymer melt. 4,237,256, Cl. 526-229.000.
Kobayashi, Hajime: *See*—
Endo, Ichiro; Kobayashi, Hajime; Yano, Yasuhiro; and Muramatsu, Takao, 4,237,213, Cl. 430-353.000.
Kobayashi, Takumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Unwinding-mechanism releasing device for use in a camera. 4,236,799, Cl. 354-209.000.
Kobayashi, Tuguo. Carbon-filament reinforced gear. 4,237,175, Cl. 428-192.000.
Kobayashi, Yuichi: *See*—
Torii, Sigeru; Tanaka, Hideo; and Kobayashi, Yuichi, 4,237,308, Cl. 560-122.000.
Kobelt, Jacob. Compact caliper brake. 4,236,608, Cl. 188-43.000.
Kobliska, Robert J.: *See*—
Aboaf, Joseph A.; Cuomo, Jerome J.; Gangulee, Amitava; and Kobliska, Robert J., 4,236,946, Cl. 148-108.000.
Koeberle, George G., to Angelus Sanitary Can Machine Company. Nozzle for steaming retortable pouches. 4,236,672, Cl. 239-139.000.
Koenig & Bauer Aktiengesellschaft: *See*—
Wieland, Erich G., 4,236,448, Cl. 101-216.000.
Kogler, Peter: *See*—
Sigott, Siegfried; Kogler, Peter; Schetina, Otto; and Zitz, Alfred, 4,236,627, Cl. 198-514.000.
Kohl, Paul A., to Bell Telephone Laboratories, Incorporated. Preventing stains on multiple-electroplated articles. 4,236,976, Cl. 204-15.000.
Kohm, Richard C.; and Foster, C. Thomas. Sign structure. 4,236,333, Cl. 40-212.000.
Kojima, Takeshi; Kinoshita, Sakae; and Takeuchi, Kenzo, to Showa Electric Wire & Cable Co., Ltd. Laminated insulating paper and oil-filled cable insulated thereby. 4,237,334, Cl. 174-25.00R.
Kolakowski, Richard A.: *See*—
DeGuiseppi, David T.; and Kolakowski, Richard A., 4,237,238, Cl. 521-131.000.
Komai, Takeshi: *See*—
Moriya, Yasuo; and Komai, Takeshi, 4,237,257, Cl. 526-230.500.
Komaki, Shojiro, to Kabushiki Kaisha Daini Seikosha. Electronic watch. 4,236,375, Cl. 58-23.00R.
Komatsu, Shigeru; Takahashi, Satoshi; Suzuki, Kouji; and Wakatsuki, Masao, to Tokyo Shibaura Denki Kabushiki Kaisha. Strain insensitive integrated circuit resistor pair. 4,236,832, Cl. 357-51.000.
Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi: *See*—
Suovaniemi, Osmo A.; Ekholm, Pertti; and Kaukanen, Esko, 4,237,094, Cl. 422-100.000.
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Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, to FMC Corporation. Bicyclic lactone derivatives. 4,237,058, Cl. 260-343.30R.
Konovalenko, Nikolai A.: *See*—
Gelperin, Nison I.; Polotsky, Leonid M.; and Konovalenko, Nikolai A., 4,236,958, Cl. 159-16.00S.
Koppers, Manfred; and Pawelski, Ludwig, to Thyssen Industrie AG. Shield timbering frame for timbering mines. 4,236,850, Cl. 405-291.000.
Korbanka, Helmut; and Scheidl, Franz, to Hoechst Aktiengesellschaft. Organotin compounds, the preparation and use thereof. 4,237,043, Cl. 260-45.75S.
Kordt, Hans-Herbert: *See*—
Stenz, Paul; and Kordt, Hans-Herbert, 4,236,780, Cl. 339-198.00G.
Korenko, Michael K.; Merrick, Howard F.; and Gibson, Robert C., to United States of America, Energy. Precipitation hardenable iron-nickel-chromium alloy having good swelling resistance and low neutron absorbence. 4,236,943, Cl. 148-32.500.
Kosonocky, Walter F.; and Angle, Rodney L., to RCA Corporation. High speed loading of output register of CCD array system. 4,237,383, Cl. 250-578.000.
Koster, Richard A.: *See*—
Turner, John; Koster, Richard A.; and Bassman, Seymour, 4,236,441, Cl. 89-40.00F.
Koster, William H.: *See*—
Cimarusti, Christopher M.; Koster, William H.; and Sykes, Richard B., 4,237,128, Cl. 424-246.000.
Kostjukov, Nikolai S.; Minakov, Nikolai V.; and Knyazev, Vladimir A. Device for passing electrical and power installation conductors through protective shell separating clean zone from contaminated one and method of assembling same. 4,237,336, Cl. 174-151.000.
Kosuga, Tadashi: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.
Kosugi, Tsuneo: *See*—
Kakita, Minoru; and Kosugi, Tsuneo, 4,236,435, Cl. 84-1.220.
Kotaka, Toshihiko: *See*—
Iida, Takao; Ozaki, Sho; and Kotaka, Toshihiko, 4,237,230, Cl. 435-207.000.
Kotani, Kikuo: *See*—
Okuyama, Tsuneo; Fujii, Tadashiro; Nakagawa, Nobuaki; and Kotani, Kikuo, 4,237,267, Cl. 536-1.000.
Kothe, Hans K.; and Strasen, Gunter, to Varta Batterie, A.G. Charge maintenance and continuous charging for storage batteries. 4,237,411, Cl. 320-21.000.
Kotturan, Paulson A. Container for sterile liquids. 4,236,647, Cl. 215-247.000.
Kotva, Rudolf: *See*—
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.
Kouno, Hiroya: *See*—
Mukai, Takamitu; Fujii, Tomoo; and Kouno, Hiroya, 4,236,621, Cl. 192-82.00T.
Kountz, Kenneth J., to Borg-Warner Corporation. Thermostatic expansion valve with lead-lag compensation. 4,236,669, Cl. 236-92.00B.

Kowa Denki Kogyo Kabushiki Kaisha: *See*—
Miyasaka, Susumu; and Miyasaka, Isamu, 4,237,440, Cl. 337-227.000.

Kozdon, Friedrich: *See*—
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.

Kozyreva, Ljudmila F.: *See*—
Zhdanova, Nelli I.; Leonova, Tatyana V.; and Kozyreva, Ljudmila F., 4,237,228, Cl. 435-116.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Harand, Elmar; and Michel, Eberhard, 4,236,970, Cl. 176-87.000.
Werker, Ekke; and Emsperger, Werner, 4,236,968, Cl. 176-38.000.

Kramer, Wolfgang: *See*—
Buchel, Karl H.; Kramer, Wolfgang; and Brandes, Wilhelm, 4,237,142, Cl. 424-269.000.

Krapf, Heinz; Oppenlaender, Knut; and Uhl, Guenter, to BASF Aktiengesellschaft. 1,3-Bis-aryl-2-oxyalkylated-glycerol ethers. 4,237,320, Cl. 568-609.000.

Kraus, George A., to Iowa State University Research Foundation, Inc. Synthesis of quinone pyrano-gamma-lactone antibiotics and antifungal agents. 4,237,057, Cl. 260-343.30R.

Krause, Herbert: *See*—
Giebel, Wolfgang; Krause, Herbert; and Meltsch, Hans-Juergen, 4,237,335, Cl. 174-92.000.

Krause, Janusz J. H.; and Stanier, Colin, to Imperial Chemical Industries Limited. Production of sheet materials. 4,236,952, Cl. 156-93.000.

Krause, Joachim: *See*—
Eidenschink, Rudolf; Krause, Joachim; and Pohl, Ludwig, 4,237,026, Cl. 252-299.000.

Krauss, Richard C.: *See*—
Dowd, William; Krauss, Richard C.; and Freiter, Edward R., 4,237,304, Cl. 548-239.000.

Krauss, Werner, to Claudius Peters Ag. Apparatus for the loosening and lifting of aerated pulverized material at an increased pressure from a silo. 4,236,852, Cl. 406-90.000.

Krautter, Hermann; and Focke, Heinz, to Focke & Co. Hinge-lid pack, more particularly for cigarettes. 4,236,663, Cl. 229-44.0CB.

Krchma, Ludwig C.; and Morris, Paul L. Method of treating blisters in asphaltic membrane covered roofs. 4,236,951, Cl. 156-71.000.

Kreiseder, Walter J., to Courtesy Mold and Tool Corporation. Releasable tie. 4,236,280, Cl. 24-16.0PB.

Kreith, Frank; and Cornelison, Richard C., to Condar, Co. Heat exchange enhancement structure. 4,236,578, Cl. 165-181.000.

Krepelka, Jiri: *See*—
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.

Kresock, John M., to GTE Products Corporation. Video black level reference system. 4,237,489, Cl. 358-168.000.

Kretz, Carl, to Kretztechnik Gesellschaft m.b.H. Equipment for use in measuring the distance between different points displayed on a fluorescent screen. 4,237,406, Cl. 315-377.000.

Kretztechnik Gesellschaft m.b.H.: *See*—
Kretz, Carl, 4,237,406, Cl. 315-377.000.

Kristensson, Nils L. O., to Landstingens Inkopscentral Lic, Ekonomisk Forening. Manual winch with safety clutch, especially as a power source in nursing for lifting patients. 4,236,694, Cl. 254-167.000.

Kromer, Karl: *See*—
Noack, Rolf; Kromer, Karl; and Zimmet, Hans, 4,236,797, Cl. 354-152.000.

Krueger, Hans; and Glaubitz, Werner, to Siemens Aktiengesellschaft. Liquid crystal illuminator having ellipoidal light guide. 4,236,791, Cl. 350-345.000.

Krueger, Wilm: *See*—
Moldan, Karl; and Krueger, Wilm, 4,236,588, Cl. 173-48.000.

Krulwich, Lester S. Nonelectric magnetizer and demagnetizer. 4,237,518, Cl. 361-267.000.

Kruyer, Jan, to Kruyer Tar Sand Development, Inc. Process for recovering bitumen from tar sand. 4,236,995, Cl. 208-11.0LE.

Kruyer Tar Sand Development, Inc.: *See*—
Kruyer, Jan, 4,236,995, Cl. 208-11.0LE.

Kuan, Tiong H., to General Tire & Rubber Company, The. White sidewall tire. 4,237,173, Cl. 428-65.000.

Kubat, Josef; and Djurner, Jan K., to Sunds AB. Method of reducing internal stresses and improving the mechanical properties of injection molded thermoplastic resins. 4,237,089, Cl. 264-328.000.

Kube, Donald: *See*—
Howell, Stephen L.; Robinson, John W.; and Kube, Donald, 4,236,437, Cl. 84-1.260.

Kubo, Junji: *See*—
Bannai, Kiyoshi; Ohnuma, Norio; Ishizuka, Seiichi; Kubo, Junji; and Naruchi, Tatuyuki, 4,237,125, Cl. 424-236.000.

Kuchenbecker, Morris W., to American Can Company. Blister package. 4,236,636, Cl. 206-461.000.

Kuehling, Guenter, to Bunker Ramo Corporation. Electrical contact feeding and attachment apparatus. 4,236,302, Cl. 29-753.000.

Kuehnle, Manfred R., to Coulter Systems Corporation. Modular electrophotographic copying machine. 4,236,807, Cl. 355-3.00R.

Kuehnle, Manfred R., to Coulter Systems Corporation. Image recording method for electrophotographic film. 4,236,812, Cl. 355-14.00E.

Kuhl, Hans. Portable heating system. 4,236,502, Cl. 126-208.000.

Kuhnlein, Hans, to Hch. Bertrams Aktiengesellschaft. Process and apparatus for purifying waste waters. 4,236,974, Cl. 203-11.000.

Kukka, Aarre: *See*—
Suovaniemi, Osmo A.; Tervamaki, Jukka; and Kukka, Aarre, 4,237,095, Cl. 422-100.000.

Kulsa, Peter: *See*—
Bochis, Richard J.; and Kulsa, Peter, 4,237,300, Cl. 546-297.000.

Kuntzel, Heiner: *See*—
Dubs, Paul; and Kuntzel, Heiner, 4,237,290, Cl. 544-335.000.

Kurashige, Shuji: *See*—
Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, 4,237,141, Cl. 424-267.000.

Kurashiki Boseki Kabushiki Kaisha: *See*—
Tanabe, Nato; Okada, Kenzoh; and Maeda, Norio, 4,237,181, Cl. 428-307.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Hiromitsu; Suzuki, Kinzaburo; Okubo, Azuma; Nakanoya, Takishi; Miura, Katsunori; and Sagi, Tadao, 4,237,233, Cl. 435-254.000.

Kurita Machinery Manufacturing Company Limited: *See*—
Kurita, Tetsuya, 4,237,009, Cl. 210-227.000.

Kurita, Tetsuya, to Kurita Machinery Manufacturing Company Limited. Filtration-compression type filter press. 4,237,009, Cl. 210-227.000.

Kuroda, Masao, to NTN Toyo Bearing Company, Limited. One-way clutch. 4,236,619, Cl. 192-45.000.

Kurtin, Stephen L.; and Kelm, Edward C. Digital delay/ambience processor. 4,237,343, Cl. 179-1.00J.

Kurumada, Tomoyuki: *See*—
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,237,294, Cl. 546-20.000.

Kusebauch, Walter: *See*—
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.

Kushima, Hiroshi: *See*—
Nakamura, Takeshi; and Kushima, Hiroshi, 4,236,710, Cl. 271-108.000.

Kuster, Erich; Goossens, Bernhard; Barthell, Eduard; and Dahmen, Kurt, to Chemische Fabrik Stockhausen & Cie. Process for the manufacture of α,β-unsaturated N-substituted carboxylic acid amides. 4,237,067, Cl. 260-561.00N.

Kutani, Chiaki: *See*—
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, 4,237,280, Cl. 544-27.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, 4,237,272, Cl. 536-17.00R.

L. & C. Steinmuller GmbH: *See*—
Dorling, Rolf; and Hemshemeier, Hans, 4,236,573, Cl. 165-54.000.

La Cellophane: *See*—
Ceintrey, Claude G., 4,237,207, Cl. 430-17.000.

La Telemecanique Electrique: *See*—
Fechant, Louis; Guery, Jean-Pierre; and Martin, Gabriel, 4,237,355, Cl. 200-147.00R.
Marcenne, Jacques, 4,236,641, Cl. 211-87.000.

Laage, Fred C.; and Loftus, Patrick A., to Laage, Fred C. Insulated and moisture absorbent food container and method of manufacture. 4,237,171, Cl. 426-127.000.

Lada, Henry: *See*—
Manty, Brian A.; Liss, Herbert R.; and Lada, Henry, 4,236,940, Cl. 148-6.200.

Ladany, Ivan, to RCA Corporation. Electroluminescent diode and optical fiber assembly. 4,237,474, Cl. 357-81.000.

Ladish Co.: *See*—
Zimmerly, Robert D., 4,237,010, Cl. 210-232.000.

Lagardere, Bruno J. F.; and Sovish, Richard C. Wrap-around devices. 4,237,174, Cl. 428-99.000.

Lake, Steven R. Portable power operated chemical spray apparatus. 4,236,673, Cl. 239-172.000.

Lambert, Lloyd J., Jr. Standing calf exercise machine. 4,236,712, Cl. 272-118.000.

Lambros, William S.; and Metzger, James I., Jr., to Emerson Electric Co. Combination arc brazing and welding electrode holder. 4,237,365, Cl. 219-139.000.

Lamer, Gerald P.: *See*—
Stearn, Richard A.; Lamer, Gerald P.; and Lenius, Norbert W., 4,236,859, Cl. 414-460.000.

Lampe, Vaino; Gunnarsson, Staffan H.; and Johansson, Karl-Erik, to Uddeholms Aktiebolag. Steel alloy. 4,236,920, Cl. 75-128.00A.

Landgraf, Hermann, to Siemens Aktiengesellschaft. Drive motor for a dental handpiece. 4,237,393, Cl. 310-59.000.

Landstingens Inkopscentral Lic, Ekonomisk Forening: *See*—
Kristensson, Nils L. O., 4,236,694, Cl. 254-167.000.

Lang, Hermann: *See*—
Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, 4,237,044, Cl. 260-112.00B.

Lange, Gerhard, to Wafios, Maschinenfabrik, Wagner, Ficker & Schmid (GmbH & Co. KG). Method of and apparatus for producing coil springs with eyelets. 4,236,397, Cl. 72-137.000.

Lange, Robert G.; and Schlotthauer, Harley L., to United States Gypsum Company. Plaster consistency reducer. 4,237,260, Cl. 528-230.000.

Langen, Hans: *See*—
Joekel, Alfred; Langen, Hans; and Denner, Peter, 4,236,299, Cl. 29-727.000.
Langston, Jimmy B.; Leeper, Harold; and Wong, Patrick S., to Alza Corporation. Patient-care apparatus with chemoprophylactic system. 4,236,517, Cl. 128-275.000.
Lanier, Howard A.: *See*—
Harrison, Donald A.; and Lanier, Howard A., 4,236,956, Cl. 156-527.000.
Lanig, Peter, to Siemens Aktiengesellschaft. Method of manufacturing a superconductor. 4,236,297, Cl. 29-599.000.
Lanin, Jury N.: *See*—
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.
Lantz, Robert H.; and Schwartz, Alfred A., to International Business Machines Corporation. Stroke expansion apparatus. 4,237,458, Cl. 340-739.000.
Lapp, John; and Willy, John R., to McGraw-Edison Company. Apparatus for processing an electrical apparatus. 4,236,484, Cl. 118-663.000.
Larbey, Robert J.: *See*—
Evans, William D. J.; Larbey, Robert J.; and Stewart, Thomas I., 4,237,032, Cl. 252-462.000.
Larsen, Arthur B., to Bell Telephone Laboratories, Incorporated. Data packet multiplexing in a staggered fashion. 4,237,553, Cl. 370-89.000.
Larsen, Kenneth M.: *See*—
Bass, Robert W.; Ferguson, Helaman R. P.; Fletcher, Harvey J.; Gardner, John H.; Harrison, B. Kent; and Larsen, Kenneth M., 4,236,964, Cl. 176-3.000.
Larson, David L., to Sherwood Refractories, Inc. Method of casting steel and iron alloys with precision cristobalite cores. 4,236,568, Cl. 164-41.000.
Larson, Willis A.; Vannice, Steven D.; and Jesson, Joseph E., to Oak Industries Inc. Isolation membrane switch. 4,237,358, Cl. 200-159.00B.
Larsson, Arnold; and Elwing, Assar, to AB Ostgota-Byggen. Reinforced building component. 4,236,364, Cl. 52-383.000.
La Russa, Joseph A.; Troutman, Richard C.; and Attler, Anthony R. Corneal punch. 4,236,519, Cl. 128-305.000.
LaSpisa, Ronald J.; and Giles, Richard F., to Phillips Petroleum Company. Automatic control of extrusion rate. 4,237,082, Cl. 264-40.600.
Latourrette, Bertrand: *See*—
Dougier, Patrick; Fouassier, Claude; and Latourrette, Bertrand, 4,237,027, Cl. 252-301.40H.
Laurello, Vincent P., to United Technologies Corporation. Gas turbine engine having bleed apparatus with dynamic pressure recovery. 4,236,869, Cl. 416-95.000.
Lauterjung, Friedrich G. Probe. 4,236,521, Cl. 128-348.000.
LaVene, Leon F.: *See*—
Benjamin, Benjamin C.; and LaVene, Leon F., 4,237,076, Cl. 261-23.00A.
Lavigne, Andre, to Videocolor S.A. Blanking voltage generator for a cathode ray tube. 4,237,479, Cl. 358-33.000.
LaVoie, Richard. Stop for vehicle license plate mounting bracket. 4,236,746, Cl. 296-1.00C.
Lax, Michael: *See*—
Jaretsky, Michael G.; and Lax, Michael, 4,236,822, Cl. 356-256.000.
Lazay, Paul D., to Bell Telephone Laboratories, Incorporated. Method for monitoring optical fiber drawing. 4,236,904, Cl. 65-2.000.
Le Mere Industries, Inc.: *See*—
Helke, Robert C., 4,237,004, Cl. 210-40.000.
Lear Siegler, Inc.: *See*—
Kellis, James T., 4,237,405, Cl. 315-307.000.
LeBouder, Maurice, to Fernotex Fernost-Testihandel. Rotary machine electronics supervisory and control apparatus. 4,237,371, Cl. 235-92.0PD.
Lechner, Bartl: *See*—
Herchenbach, Horst; and Lechner, Bartl, 4,236,932, Cl. 106-100.000.
Le Dall, Guy, to Permo S.A. Electronic means for controlling the regeneration of resins in a resin type ion exchange device. 4,237,538, Cl. 364-500.000.
Lee, Gim F., Jr.: *See*—
Eliassen, John D.; Lee, Gim F., Jr.; and Watson, James, Jr., 4,237,265, Cl. 528-496.000.
Leeper, Harold: *See*—
Langston, Jimmy B.; Leeper, Harold; and Wong, Patrick S., 4,236,517, Cl. 128-275.000.
Leesona Corporation: *See*—
West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., 4,236,885, Cl. 425-514.000.
Le Fur, Gerard R.: *See*—
Champseix, Alain A.; Gueremy, Claude G. A.; and Le Fur, Gerard R., 4,237,139, Cl. 424-258.000.
Leggett, Paul. Tree stand and seat. 4,236,602, Cl. 182-187.000.
Leland Stanford Jr. University, Board of Trustees of the: *See*—
Cohen, Stanley N.; and Boyer, Herbert W., 4,237,224, Cl. 435-68.000.
Lemelson, Jerome H. Beam welding apparatus and method. 4,237,363, Cl. 219-121.0LM.
Lemelson, Jerome H. Welding tool and method. 4,237,364, Cl. 219-121.0LC.
Lemke, James U.; and Bixby, James A. Radar synchronizing apparatus and method. 4,237,462, Cl. 343-5.00R.
Lemmon, John A. Hip cart. 4,236,723, Cl. 280-1.500.
Leng, Douglas E.: *See*—
Forster, Allen V.; Martz, Lyle E.; and Leng, Douglas E., 4,237,110, Cl. 423-488.000.
Lenhardt, Wilfried K., to Mobil Oil Corporation. Chromatograph signal generator. 4,237,422, Cl. 328-61.000.
Lenius, Norbert W.: *See*—
Stearn, Richard A.; Lamer, Gerald P.; and Lenius, Norbert W., 4,236,859, Cl. 414-460.000.
Lenke, Dieter: *See*—
Thieme, Peter C.; Frickel, Fritz-Frieder; Hagen, Helmut; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,237,278, Cl. 542-429.000.
Leonard, Herbert G.: *See*—
Sienkiewicz, Gerald C.; McQuade, Donal J.; and Leonard, Herbert G., 4,236,678, Cl. 242-55.19A.
Leonard, John B.: *See*—
Barthelme, Richard W.; Leonard, John B.; and Biercuk, John N., 4,236,686, Cl. 244-116.000.
Leoni, Roberto; Baldini, Alberto; and Angelini, Gianfranco, to SNIA VISCOSA Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Process for the preparation of solutions of cellulose derivatives which can be coagulated and spun to form regenerated cellulose bodies. 4,237,274, Cl. 536-56.000.
Leonova, Tatyana V.: *See*—
Zhdanova, Nelli I.; Leonova, Tatyana V.; and Kozyreva, Ljudmila F., 4,237,228, Cl. 435-116.000.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, to Ciba-Geigy Corporation. Metal complexes of azomethines. 4,237,286, Cl. 544-225.000.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, to Ciba-Geigy Corporation. Metal complexes of azomethines. 4,237,292, Cl. 546-7.000.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, to Ciba-Geigy Corporation. Metal complexes of azomethines. 4,237,293, Cl. 546-7.000.
Lepori, Agostino: *See*—
Cantalupo, Giuseppe; De Servi, Sergio; and Lepori, Agostino, 4,237,258, Cl. 526-273.000.
Leutner, Bernd: *See*—
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, 4,237,318, Cl. 562-609.000.
Leverentz, Earl T.: *See*—
Schreyer, Kenneth D.; Leverentz, Earl T.; and Nusz, Thomas R., 4,236,456, Cl. 105-154.000.
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Stahl, Quade R., 4,236,895, Cl. 23-232.00R.
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Dolling, Ulf H., 4,237,315, Cl. 562-469.000.
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Scattergood, Edgar M., 4,237,033, Cl. 260-6.000.
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Eidenschink, Rudolf; Krause, Joachim; and Pohl, Ludwig, 4,237,026, Cl. 252-299.000.
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Hamel, Pierre A.; and Rokach, Joshua, 4,237,160, Cl. 424-275.000.
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Botzler, Ludwig, 4,236,442, Cl. 91-375.00R.
Kissel, Gerhard K., 4,236,685, Cl. 244-83.00D.
Metal Box Limited: *See—*
Smith, Stanley; and Harries, John R., 4,236,625, Cl. 198-454.000.
Metcalf, Silas L., to Outboard Marine Corporation. Marine propeller fish line and weed cutter. 4,236,872, Cl. 416-146.00R.
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Brueggemann, Walter H.; and Meteer, Charles L., 4,237,176, Cl. 428-212.000.
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DePenti, Kenneth L., 4,236,644, Cl. 213-62.00R.
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Appeldorn, Roger H., 4,237,493, Cl. 358-237.000.
Fanselow, Dan L., 4,237,211, Cl. 430-338.000.
Newell, Richard G.; and Rude, Harold E., 4,237,252, Cl. 525-454.000.
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Hayashi, Toshio; and Imura, Toshinori, 4,236,796, Cl. 354-145.000.
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Minz, Franz-Rudolf; and Wiechers, Herbert, to Bayer Aktiengesellschaft. Process and apparatus for electrolysis of hydrochloric acid. 4,236,983, Cl. 204-129.000.
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Mislin, Roland, to Sandoz Ltd. Anthraquinone reactive dyes. 4,237,284, Cl. 544-189.000.
Mista, Kresimir, to Karl Mayer Textilmaschinenfabrik GmbH. Thread inserter and braking mechanism for a knotting apparatus used on spooling machines. 4,236,739, Cl. 289-2.000.
Mitchell, Albert W., to Emerson Electric Company. Vegetation cutting apparatus. 4,236,311, Cl. 30-276.000.
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Fuga, Nobuhiko; Uchimura, Kunio; and Takahashi, Hideyuki, 4,237,326, Cl. 585-4.000.
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Nambu, Hirohiko; Hashimoto, Isao; and Imai, Ichiro, 4,237,319, Cl. 568-571.000.
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Mizobuchi, Yuzo: *See*—
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Hultman, Bengt G.; and Berglund, Erik A., 4,236,960, Cl. 162-30.00K.
Mobay Chemical Corporation: *See*—
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Mobil Oil Corporation: *See*—
Bell, Weldon K.; and Chang, Clarence D., 4,237,063, Cl. 260-449.00R.
Gough, Stanley T. D., 4,237,075, Cl. 260-976.000.
Lenhardt, Wilfried K., 4,237,422, Cl. 328-61.000.
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Ramus, Joseph S., 4,236,349, Cl. 47-1.400.
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Mocek, Aloysius M., Jr.: *See*—
Murray, Joseph E.; and Mocek, Aloysius M., Jr., 4,237,530, Cl. 362-418.000.
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, to Abbott Laboratories. Derivatives of fortimicin A. 4,237,269, Cl. 536-17.00R.
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Modica, Giovanni: *See*—
de Nora, Oronzio; Giuffre, Luigi; and Modica, Giovanni, 4,236,979, Cl. 204-98.000.
Moers, Daniel; and Balland, Michel, to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes. Pneumatic tire with anisotropic filler strip. 4,236,563, Cl. 152-354.00R.
Moertel, George B., to Textron Inc. Coupling element for slide fastener and method of manufacture. 4,236,683, Cl. 24-205.13R.
Mohr, Adolf; and Corbach, Rainer, to Robert Bosch GmbH. Electric machine, especially small motor. 4,237,397, Cl. 310-154.000.
Mol, Hans C.; and Brown, Michael A., to Pitney Bowes, Inc. Sheet stacking apparatus. 4,236,856, Cl. 414-54.000.
Molby, Lloyd A. Off-road vehicle that both oscillates and articulates. 4,236,591, Cl. 180-41.000.
Moldan, Karl; and Krueger, Wilm, to Hilti Aktiengesellschaft. Hammer drill with a lockable tool holder. 4,236,588, Cl. 173-48.000.
Molina, Jorge W., to Deutsch Fastener Corp. Ratchet bolt assembly. 4,236,562, Cl. 151-69.000.
Momonoi, Kaishu: *See*—
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Mondelli, Alfred A.: *See*—
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Monthony, James F.; Schwartz, Norman D.; Hollis, Donald F.; and Polastri, Gian D., to Bio-Rad Laboratories, Inc. Micro-carrier cell culture. 4,237,218, Cl. 435-2.000.
Monticelli, Giulio. Self-locking nut. 4,236,561, Cl. 151-19.00R.
Moore Business Forms, Limited: *See*—
Hektoen, Per, 4,236,731, Cl. 282-11.50A.
Moore, David C.; Cooper, Edward W.; and Porteous, Archibald, to ACCO International Inc. Glide insert for hanging file folder system. 4,236,770, Cl. 312-184.000.
Moore, John R., to Hospital Communication Systems, Inc. Rapid response health care communications system. 4,237,344, Cl. 179-2.00A.
Moore, Richard W.: *See*—
Wootton, Gordon; and Moore, Richard W., 4,237,131, Cl. 424-248.510.
Moote, Bruce. Removable fog light filters. 4,237,523, Cl. 362-2.000.
Moreno, Joseph A. Frog game. 4,236,713, Cl. 273-1.00M.
Moretti, Anthony L., to E. D. Bullard Compeny. Respiration system. 4,236,514, Cl. 128-201.230.
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Morita, Ken-ichi: *See*—
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Hiramatsu, Toru; and Morita, Ken-ichi, 4,237,109, Cl. 423-447.500.
Morita, Toyoo; and Oura, Hiroshi, to Yoshida Kogyo K.K. Method and apparatus for forming space sections in a slide fastener. 4,236,293, Cl. 29-408.000.
Morita, Toyoo, to Yoshida Kogyo K.K. Device for spreading apart a pair of tapes. 4,236,304, Cl. 29-768.000.
Moritsugi, Takeharu: *See*—
Kitamura, Minoru; Hayashi, Tsutomu; Moritsugi, Takeharu; and Saruwatari, Mitsuyoshi, 4,236,914, Cl. 75-58.000.
Moritz, Victor, to Societe Orleanaise de Literie et de Mecanique. Seat for a public transport vehicle. 4,236,750, Cl. 297-183.000.
Moriya, Yasuo; and Komai, Takeshi, to Nippon Oil and Fats Co. Process for producing low molecular weight styrene series polymers. 4,237,257, Cl. 526-230.500.
Morris, Alan J.; and Rado, Theodore A., to Kerr-McGee Corporation. Slurry removal process. 4,236,896, Cl. 23-293.00R.
Morris, Joseph H., to United States of America, Navy. Friction reducing arrangement for hydraulic machines. 4,236,867, Cl. 415-26.000.
Morris, Paul L.: *See*—
Krchma, Ludwig C.; and Morris, Paul L., 4,236,951, Cl. 156-71.000.
Morrison, Archibald J. S. Sea swell compensation. 4,236,695, Cl. 254-172.000.
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., to Burroughs Wellcome Co. 2,7-Diamino-8-methyl-5-substituted pyrido{2,3-d}pyrimidin-6-ones. 4,237,289, Cl. 544-279.000.
Morrison, Roger A.: *See*—
Tabak, Samuel A.; and Morrison, Roger A., 4,236,996, Cl. 208-134.000.
Morrone, James V. Record album filing cabinet. 4,236,768, Cl. 312-10.000.
Mosby, John S., Jr., to Mosby, John S., Jr.; and Sealy, L. Gregg. Smoking apparatus. 4,236,539, Cl. 131-175.000.
Moss, Charles W. Portable tent. 4,236,543, Cl. 135-3.00R.
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Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,236,729, Cl. 280-804.000.
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Stein, Marc T., 4,237,414, Cl. 323-4.000.
Weinberg, Morton, 4,237,448, Cl. 340-311.000.
Motta, Raimondo, to Oxon Italia S.p.A. Process for obtaining 4,5-dichloro-2-phenyl-3(2H)-pyridazinone from 5-chloro-4-amino-2-phenyl-3(2H)-pyridazinone. 4,237,287, Cl. 544-241.000.
Mrozek, Christian: *See*—
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Mueller, Dale A., to Honeywell Inc. Heat pump compressor crankcase low differential temperature detection and control system. 4,236,379, Cl. 62-126.000.
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Mueller, Martin L. Rotating display stand. 4,236,769, Cl. 312-135.000.
Mueller, Wolfgang, to Siemens Aktiengesellschaft. Device for adjusting the height of a ribbon guide. 4,236,839, Cl. 400-216.100.
Mukai, Takamitu; Fujii, Tomoo; and Kouno, Hiroya, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for protecting a compressor from breakdown. 4,236,621, Cl. 192-82.00T.
Mulder, Albertus J.; and de Jong, Aaldert J., to Shell Oil Company. Process for preparation of 1,5-dimethylbicyclo[3,2,1]octan-8-ol. 4,237,322, Cl. 568-820.000.
Muller, Erich, to Andreas Stihl. Portable working implement. 4,236,310, Cl. 30-276.000.
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Muller, Rene; and Stucki, Samuel, to BBC Brown, Boveri & Company, Limited. Electrode for water electrolysis. 4,236,993, Cl. 204-294.000.
Multimarques Inc.: *See*—
Satin, Morton, 4,237,170, Cl. 426-21.000.
Munro, James A.; and Lummis, Alan P., to Sperry Corporation. Agricultural harvesting machines with crop pick-up mechanisms. 4,236,372, Cl. 56-364.000.
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Maehara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, to Nippon Shinyaku Co., Ltd. Morpholinone derivatives and method of use. 4,237,132, Cl. 424-248.520.
Murakami, Takeshi; Oeda, Yoshitaka; Hayashi, Hiroo; and Nakamura, Teruo, to Kanzaki Paper Manufacturing Co., Ltd. Heat-sensitive record material. 4,236,732, Cl. 282-27.500.

Murakami, Takeshi: *See*—
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Muramatsu, Takao: *See*—
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Murch, Robert M.: *See*—
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Murphy, Clarence R.; Boehme, Robert E., deceased; by Boehme, Helen J., legal representative; and by Phelp, Joseph P., executor, to Gulf Oil Corporation. Method for preparation of fibrils. 4,237,081, Cl. 264-9.000.
Murray, James G., to Mobil Oil Corporation. Suspension stabilizer for p-methylstyrene suspension polymerization. 4,237,255, Cl. 526-201.000.
Murray, Joseph E.; and Mocek, Aloysius M., Jr., to Rowe Industries Inc., Division of Groman Corporation. High mast light support system. 4,237,530, Cl. 362-418.000.
Murray, Robert M. S.: *See*—
Pitches, Brian E.; Murray, Robert M. S.; and Greig, Ian A., 4,237,537, Cl. 364-465.000.
Musgrave, Daniel D. Magazine spring adjustment apparatus. 4,236,338, Cl. 42-90.000.
Musial, George J., to Gear/tronics Corporation. Traverse mechanism and method. 4,236,415, Cl. 74-25.000.
Mutschler, Erich; Prohaska, Hans; and Weber, Adam, to ITT Industries, Inc. Headlamp adjusting device. 4,237,529, Cl. 362-272.000.
Myers, Donald M., to Ludlow Industries, Inc. Motion monitoring apparatus. 4,237,517, Cl. 361-239.000.
Myrick, Alma L. Pressure transmitting apparatus. 4,236,412, Cl. 73-706.000.
Nachtkamp, Klaus: *See*—
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Nagai, Yasutaka: *See*—
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Nagashima, Yukio: *See*—
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Nahara, Akira; Wada, Minoru; Mizobuchi, Yuzo; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Recording member. 4,237,468, Cl. 346-135.100.
Naito, Michinori, to Trio Kabushiki Kaisha. Superheterodyne receiver having distortion reducing circuitry. 4,237,556, Cl. 455-154.000.
Naka, Hiromitsu. Turning type emergency escape. 4,236,601, Cl. 182-76.000.
Nakagawa, Nobuaki: *See*—
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Nakajima, Yasuo: *See*—
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Nakamine, Chosin; and Fuzii, Norihito, to Tokyo Shibaura Denki Kabushiki Kaisha. Toner concentration control device. 4,236,486, Cl. 118-691.000.
Nakamura, Hitoshi: *See*—
Takahashi, Akio; Tsumuki, Chiaki; and Nakamura, Hitoshi, 4,236,923, Cl. 75-208.00R.
Nakamura, Kazuo: *See*—
Fujiwara, Junichi; and Nakamura, Kazuo, 4,237,183, Cl. 428-336.000.
Nakamura, Ken; Nakajima, Yasuo; Ofuji, Hiromichi; and Murata, Eiji, to Nissan Motor Company, Limited. EGR Control system. 4,236,493, Cl. 123-119.00A.
Nakamura, Kotaro: *See*—
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; Furutachi, Nobuo; and Nakamura, Kotaro, 4,237,217, Cl. 430-387.000.
Nakamura, Takeshi; and Kushima, Hiroshi, to Fuji Photo Film Co., Ltd. Sheet supplying apparatus. 4,236,710, Cl. 271-108.000.
Nakamura, Teruo: *See*—
Murakami, Takeshi; Oeda, Yoshitaka; Hayashi, Hiroo; and Nakamura, Teruo, 4,236,732, Cl. 282-27.500.
Nakamura, Yoshimitsu, to Matsushita Electric Works, Ltd. Method of making rotor coil of coreless motor. 4,236,295, Cl. 29-598.000.
Nakano, Hiroshige: *See*—
Matsuzaki, Kazuo; Katagiri, Shigenobu; and Nakano, Hiroshige, 4,236,447, Cl. 101-93.140.
Nakano, Seizo: *See*—
Oishi, Kazuaki; Nakano, Seizo; and Kitano, Yutaka, 4,237,520, Cl. 361-335.000.
Nakanoya, Takishi: *See*—
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Hiromitsu; Suzuki, Kinzaburo; Okubo, Azuma; Nakanoya, Takishi; Miura, Katsunori; and Sagi, Tadao, 4,237,233, Cl. 435-254.000.
Nakao, Toshihiro, to Olympus Optical Co., Ltd. Operation mechanism for tape recorder. 4,236,423, Cl. 74-483.0PB.
Nakata, Tetsuya: *See*—
Matoba, Yasuo; Kise, Yoshio; Yamada, Nobuo; Hashimoto, Akira; and Nakata, Tetsuya, 4,237,248, Cl. 525-335.000.
Nakaya, Tadao; and Kobashi, Takashi, to Kabushiki Kaisha Mitutoyo Seisakusho. Measuring instrument. 4,236,481, Cl. 116-292.000.
Nakayama, Yoshinori: *See*—
Asao, Shuichiro; Yamamoto, Shigeo; Hisada, Yoshio; Nakayama, Yoshinori; and Takayama, Chiyozo, 4,237,122, Cl. 424-200.000.
Nambu, Hirohiko; Hashimoto, Isao; and Imai, Ichiro, to Mitsui Petrochemical Industries Ltd. Process for liquid-phase oxidation of m-diisopropylbenzene. 4,237,319, Cl. 568-571.000.
Namiki, Naokuni, to Slidex Corporation. Filing sheet for microscope slides. 4,236,635, Cl. 206-456.000.
Narain, Kartik A., to Cyprus Metallurgical Processes Corporation. Recovery of elemental sulfur and metal values from tailings from copper recovery processes. 4,236,918, Cl. 75-101.00R.
Narasimha, Madihally J., to Granger Associates. Transmultiplexer. 4,237,551, Cl. 370-50.000.
Naruchi, Tatuyuki: *See*—
Bannai, Kiyoshi; Ohnuma, Norio; Ishizuka, Seiichi; Kubo, Junji; and Naruchi, Tatuyuki, 4,237,125, Cl. 424-236.000.
Narui, Michinori: *See*—
Yamada, Yozo; and Narui, Michinori, 4,237,505, Cl. 360-122.000.
Nashua Corporation: *See*—
Davis, Austin E.; Cormier, Raymond G.; Lutz, Leo O.; Pauk, Henry T.; and Lones, Harry E., 4,236,483, Cl. 118-647.000.
National Printing Plate Company, Inc.: *See*—
Fishburn, Charles E., 4,236,542, Cl. 134-153.000.
National Research Development Corporation: *See*—
Backhurst, John R.; Fleischmann, Martin; Goodridge, Francis; and Plimley, Raymond E., 4,236,991, Cl. 204-272.000.
Colman, Derek A.; and Thew, Martin T., 4,237,006, Cl. 210-84.000.
Hughes, John F.; and Roberts, John M. C., 4,237,028, Cl. 252-359.00B.
National Semiconductor Corporation: *See*—
Buurma, Gerald B., 4,237,390, Cl. 307-362.000.
National Tax Administration Agency: *See*—
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,237,232, Cl. 435-243.000.
National Utility Products Company: *See*—
Bowman, Harold M., 4,236,358, Cl. 52-19.000.
Natschke, Scott L.: *See*—
Kanjo, Wajih; Housman, Richard J.; and Natschke, Scott L., 4,236,424, Cl. 74-505.000.
Nawa, Hideo: *See*—
Okamato, Toshiaki; and Nawa, Hideo, 4,236,471, Cl. 112-240.000.
Neier, Wilhelm: *See*—
Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, 4,237,325, Cl. 568-896.000.
Nemenz, Andreas U., to Stabilus GmbH. Telescopic spring operable as an electric switch. 4,237,353, Cl. 200-52.00R.
Nemoto, Kazuyuki, to Olympus Optical Co., Ltd. Release electromagnet assembly. 4,237,439, Cl. 335-230.000.
Nerenberg, Robert W.; and Shiverdecker, James H., to Interstate Folding Box Company, The. Carton closing and sealing apparatus for lined cartons and method of closing same. 4,236,368, Cl. 53-491.000.
Netravali, Arun N.: *See*—
Brown, Earl F.; and Netravali, Arun N., 4,237,484, Cl. 358-142.000.
Neudeck, Gene T., to McQuay-Perfex, Inc. Separately removable tubes in heavy duty heat exchanger assemblies. 4,236,577, Cl. 165-175.000.
Neumann, Brigitte: *See*—
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, 4,237,291, Cl. 544-346.000.
Newbower, Ronald S.; and Philip, James H., to Massachusetts General Hospital. Cardiac output detection by multiple frequency thermodilution. 4,236,527, Cl. 128-692.000.
Newell, Richard G.; and Rude, Harold E., to Minnesota Mining and Manufacturing Company. Heat activatable one-part liquid resin systems. 4,237,252, Cl. 525-454.000.
Newitzki, Berthold, to Erich Ruhl Chemische Fabrik und Chemikalien-Grosshandel, Firma. Plastics material and method of producing said material. 4,237,236, Cl. 521-123.000.
Nicholson Manufacturing Company: *See*—
Nicholson, Thomas W., 4,236,554, Cl. 144-34.00R.
Nicholson, Thomas W., to Nicholson Manufacturing Company. Land clearing machine. 4,236,554, Cl. 144-34.00R.
Nicod, Frederick: *See*—
Pollitt, John M.; and Nicod, Frederick, 4,236,755, Cl. 297-483.000.
Nieuwendijk, Joris A. M.: *See*—
Vink, Nicolaas G.; Nieuwendijk, Joris A. M.; and Heijnemans, Werner A. L., 4,237,437, Cl. 335-211.000.
Nifco Inc.: *See*—
Omote, Kazuaki; and Watanabe, Koji, 4,236,274, Cl. 16-150.000.
Niggemeier, Joseph F.; Stoller, David A.; and Xander, William J., to ACF Industries, Incorporated. Plated container pedestal locking member. 4,236,853, Cl. 410-77.000.
Nihon Shinku Gijutsu Kabushiki Kaisha: *See*—
Fujiwara, Junichi; and Nakamura, Kazuo, 4,237,183, Cl. 428-336.000.

Nilson, Nils B. Syringe and disposable container therefor. 4,236,516, Cl. 128-216.000.
Nippon Cable System, Inc.: *See—*
Baba, Masanao, 4,236,421, Cl. 74-467.000.
Nippon Electric Co., Ltd.: *See—*
Aikoh, Shinichi; Niwa, Kunihiko; and Tomozawa, Atsushi, 4,237,552, Cl. 370-83.000.
Nokubo, Jyoji; and Mayumi, Hiroshi, 4,237,388, Cl. 307-214.000.
Yonezawa, Masatomo; Utsumi, Kazuaki; and Ohno, Tomeji, 4,236,928, Cl. 106-39.500.
Nippon Ester Co., Ltd.: *See—*
Kawamura, Hideo; Fukami, Ichiro; Wada, Shuhei; and Yoshikawa, Fusayuki, 4,237,261, Cl. 528-272.000.
Nippon Gaishi Kabushiki Kaisha: *See—*
Noguchi, Masaaki; Bunda, Tsuchio; Yamamoto, Noboru; and Soejima, Shigeo, 4,237,030, Cl. 252-432.000.
Nippon Kayaku Kabushiki Kaisha: *See—*
Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, 4,237,141, Cl. 424-267.000.
Nippon Kogaku K.K.: *See—*
Shimomura, Jun, 4,236,803, Cl. 354-286.000.
Toyoda, Kenji; and Shimomura, Jun, 4,236,804, Cl. 354-286.000.
Nippon Oil and Fats Co.: *See—*
Moriya, Yasuo; and Komai, Takeshi, 4,237,257, Cl. 526-230.500.
Nippon Shinyaku Co., Ltd.: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Maehara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,237,132, Cl. 424-248.520.
Nippon Soken, Inc.: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.
Nippon Zeon Co., Ltd.: *See—*
Yamazaki, Masahiro; Makuta, Yoshihiro; Joh, Yasushi; and Kaneko, Noriaki, 4,237,013, Cl. 210-321.00B.
Nippondenso Co., Ltd.: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, 4,236,901, Cl. 55-276.000.
Nishibe, Koji, to Kabushiki Kaisha Kawai Sakki Susakusho. Apparatus for producing a vocal sound signal in an electronic musical instrument. 4,236,434, Cl. 84-1.190.
Nishida, Minoru: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.
Nishikawa, Akikazu, to Kenki Kagaku Keiki Co., Ltd. Signal transmission apparatus of two-wire type. 4,237,417, Cl. 324-118.000.
Nishio, Yoji; Hara, Toshitaka; and Hamada, Nagaharu, to Hitachi, Ltd. Microprocessor controlled display system. 4,237,543, Cl. 364-900.000.
Nishizawa, Hiroshi: *See—*
Ishimaru, Toshiaki; Nishizawa, Hiroshi; and Osada, Yuichi, 4,237,251, Cl. 525-440.000.
Nissan Motor Company, Limited: *See—*
Nakamura, Ken; Nakajima, Yasuo; Ofuji, Hiromichi; and Murata, Eiji, 4,236,493, Cl. 123-119.00A.
Omote, Kazuaki; and Watanabe, Koji, 4,236,274, Cl. 16-150.000.
Nissen, Peter: *See—*
Appel, Eggert; Geisler, Gottfried; Kiene, Wilfried; and Nissen, Peter, 4,236,410, Cl. 73-194.0EM.
Nisshin Steel Co., Ltd.: *See—*
Ito, Takehiko; Hirose, Yusuke; and Ishida, Hideaki, 4,237,192, Cl. 428-659.000.
Niwa, Kunihiko: *See—*
Aikoh, Shinichi; Niwa, Kunihiko; and Tomozawa, Atsushi, 4,237,552, Cl. 370-83.000.
Nixon, Larry R.: *See—*
Herbert, John T.; and Nixon, Larry R., 4,236,737, Cl. 285-234.000.
Noack, Rolf; Kromer, Karl; and Zimmet, Hans, to VEB Pentacon Dresden Kamera- und Kinowerke. Mirror mechanism for a monocular reflex camera. 4,236,797, Cl. 354-152.000.
Noda, Nobuhiro: *See—*
Takahashi, Nagashige; and Noda, Nobuhiro, 4,236,509, Cl. 128-4.000.
Noe, Oskar, to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH. Walking beam conveyor. 4,236,626, Cl. 198-488.000.
Noguchi, Masaaki; Bunda, Tsuchio; Yamamoto, Noboru; and Soejima, Shigeo, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Nippon Gaishi Kabushiki Kaisha. Catalyst for purifying exhaust gas from an internal combustion engine. 4,237,030, Cl. 252-432.000.
Nojiro, Kikuo: *See—*
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,237,232, Cl. 435-243.000.
Nokubo, Jyoji; and Mayumi, Hiroshi, to Nippon Electric Co., Ltd. Inverter circuit. 4,237,388, Cl. 307-214.000.
Noll, Klaus; Nachtkamp, Klaus; and Pedain, Josef, to Bayer Aktiengesellschaft. Process for the preparation of polyurethanes which are dispersible in water. 4,237,264, Cl. 528-67.000.
Nordischer Maschinenbau Rud. Baader GmbH & Co. KG: *See—*
Westerdahl, Henri, 4,236,275, Cl. 17-46.000.
Nordlund, Tore: *See—*
Norin, Ake; and Nordlund, Tore, 4,236,910, Cl. 71-9.000.
Norin, Ake; and Nordlund, Tore, to Armerad Betong Vagforbattringar AB. Method of biologically decomposing organic material, and apparatus for carrying out the method. 4,236,910, Cl. 71-9.000.
Norlin Industries, Inc.: *See—*
Diaz, Raul, 4,236,774, Cl. 312-351.000.
Norris, Thomas E.; and Spence, Bertle, to Water Front Products, Inc. Boat hull cleaning device. 4,236,477, Cl. 114-222.000.
Norsk Hydro a.s.: *See—*
Wallevik, Oddmund; and Dessen, Erik, 4,237,111, Cl. 423-632.000.
Northeast Shipley Company, Ltd.: *See—*
Van Twuyver, Robert; and Johnson, James M., 4,236,276, Cl. 17-48.000.
Northup, Marcus A., Jr.: *See—*
Schoenholz, Daniel; Petersen, Arthur W.; and Northup, Marcus A., Jr., 4,236,935, Cl. 134-2.000.
Nortron Corporation: *See—*
Curchod, Donald B.; and Borner, Wilhelm, 4,236,315, Cl. 33-203.180.
Novotechnik KG Offterdinger & Co.: *See—*
Gass, Ernst, 4,237,443, Cl. 338-202.000.
NRM Corporation: *See—*
Turk, Leonard G.; and Enders, George E., 4,236,883, Cl. 425-32.000.
NTN Toyo Bearing Company, Limited: *See—*
Kuroda, Masao, 4,236,619, Cl. 192-45.000.
Nunogawa, Yasuhiro: *See—*
Ikeda, Tsuneo; and Nunogawa, Yasuhiro, 4,237,487, Cl. 358-154.000.
Nusser, Hermann: *See—*
Greiner, Max; Peters, Klaus J.; Schelthas, Peter; Stiefel, Peter; and Nusser, Hermann, 4,237,079, Cl. 261-44.00A.
Nusz, Thomas R.: *See—*
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Oak Industries Inc.: *See—*
Larson, Willis A.; Vannice, Steven D.; and Jesson, Joseph E., 4,237,358, Cl. 200-159.00B.
O'Brien, Joseph P.: *See—*
Papay, Andrew G.; and O'Brien, Joseph P., 4,237,020, Cl. 252-47.500.
Oce'-Industries, Inc.: *See—*
Thompson, John U., 4,236,680, Cl. 242-74.100.
Oeda, Yoshitaka: *See—*
Murakami, Takeshi; Oeda, Yoshitaka; Hayashi, Hiroo; and Nakamura, Teruo, 4,236,732, Cl. 282-27.500.
Ofuji, Hiromichi: *See—*
Nakamura, Ken; Nakajima, Yasuo; Ofuji, Hiromichi; and Murata, Eiji, 4,236,493, Cl. 123-119.00A.
Ogawa, Hisashi: *See—*
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,236,729, Cl. 280-804.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,236,730, Cl. 280-804.000.
Ogawa, Tadashi: *See—*
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, 4,236,901, Cl. 55-276.000.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.
Ogontz Controls Company: *See—*
Harasewych, Bohdan A., 4,236,547, Cl. 137-243.000.
O gren, Sven O.: *See—*
Lindberg, Ulf M. A.; Ross, Svante B.; Thorberg, Seth-Olov; and O gren, Sven O., 4,237,311, Cl. 560-173.000.
Ogura, Katsuyuki: *See—*
Tsuchihashi, Genichi; and Ogura, Katsuyuki, 4,237,298, Cl. 546-238.000.
Ohata, Katsuya: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Maehara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,237,132, Cl. 424-248.520.
Ohkura, Toshihiko: *See—*
Shibano, Yoshizo; Hatano, Tetsuo; and Ohkura, Toshihiko, 4,237,465, Cl. 343-894.000.
Ohno, Hiroyuki: *See—*
Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki, 4,237,266, Cl. 536-1.000.
Ohno, Tomeji: *See—*
Yonezawa, Masatomo; Utsumi, Kazuaki; and Ohno, Tomeji, 4,236,928, Cl. 106-39.500.
Ohnuma, Norio: *See—*
Bannai, Kiyoshi; Ohnuma, Norio; Ishizuka, Seiichi; Kubo, Junji; and Naruchi, Tatuyuki, 4,237,125, Cl. 424-236.000.
Oishi, Kazuaki; Nakano, Seizo; and Kitano, Yutaka, to Hitachi, Ltd. Gas insulated switch-gear apparatus. 4,237,520, Cl. 361-335.000.
Okada, Isao: *See—*
Kitagawa, Sadao; Okada, Isao; Saito, Teruo; Masukawa, Shoichi; Watanabe, Yoshihisa; and Imanari, Makoto, 4,237,254, Cl. 526-122.000.
Okada, Kenzoh: *See—*
Tanabe, Nato; Okada, Kenzoh; and Maeda, Norio, 4,237,181, Cl. 428-307.000.
Okamato, Toshiaki; and Nawa, Hideo, to Aisin Seiki Kabushiki Kaisha. Color cooled presser feet. 4,236,471, Cl. 112-240.000.

Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, to Pioneer Electronic Corporation. Magnetic tape running state and tape run amount display device. 4,237,373, Cl. 235-92.0EV.

Okayama, Akio: *See*—
Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, 4,236,925, Cl. 75-229.000.

Oku, Teruo: *See*—
Kamiya, Takashi; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; and Takeno, Hidekazu, 4,237,305, Cl. 560-29.000.

Okubo, Azuma: *See*—
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Hiromitsu; Suzuki, Kinzaburo; Okubo, Azuma; Nakanoya, Takishi; Miura, Katsunori; and Sagi, Tadao, 4,237,233, Cl. 435-254.000.

Okuyama, Tsuneo; Fujii, Tadashiro; Nakagawa, Nobuaki; and Kotani, Kikuo, to Toyo Jozo Kabushiki Kaisha. Disulfide compounds of a carrier, having S—S exchange reactivity. 4,237,267, Cl. 536-1.000.

Oldford, William G., to Huron Tool & Manufacturing Division of U.S. Industries, Inc. Apparatus and method for fabricating pulleys. 4,236,289, Cl. 29-159.00R.

Olds, Linda W.; and Olds, Merton R., to Olds, Linda W.; Olds, Merton R.; and Williamson, John L. Separable multi-component aquarium filtering and cleaning device. 4,236,488, Cl. 119-5.000.

Olds, Merton R.: *See*—
Olds, Linda W.; and Olds, Merton R., 4,236,488, Cl. 119-5.000.

Olin Corporation: *See*—
Bartoszek, John A.; and Hirdler, Louis C., 4,237,285, Cl. 544-192.000.
Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., 4,236,570, Cl. 164-49.000.
Scardera, Michael; and Schifilliti, Garrett B., 4,236,891, Cl. 8-108.00A.

Oliver, David W., to United States of America, Army. Erosion lithography with high-aspect nozzle. 4,237,209, Cl. 430-317.000.

Olson, Charles L.; and Hacke, Joseph F., to RCA Corporation. Television camera highlight discharge apparatus. 4,237,491, Cl. 358-223.000.

Olympus Optical Co., Ltd.: *See*—
Kaneko, Nobutaka; and Fujimori, Ryo, 4,236,828, Cl. 356-444.000.
Nakao, Toshihiro, 4,236,423, Cl. 74-483.0PB.
Nemoto, Kazuyuki, 4,237,439, Cl. 335-230.000.
Osanai, Akira, 4,236,681, Cl. 242-198.000.
Sato, Masaaki, 4,237,540, Cl. 364-705.000.
Suzuki, Nobuyoshi; and Yoshinari, Shigeru, 4,236,988, Cl. 204-195.00R.

Omholt, Ray E. Wall system. 4,236,362, Cl. 52-228.000.

Omote, Kazuaki; and Watanabe, Koji, to Nissan Motor Company, Limited; and Nifco Inc. Pantographic open-close device. 4,236,274, Cl. 16-150.000.

Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Derivatives of thiazolidinecarboxylic acids and related acids. 4,237,129, Cl. 424-246.000.

Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Derivatives of thiazolidinecarboxylic acids and related acids. 4,237,134, Cl. 424-248.520.

Onishi, Hiroshi: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.

Onodera, Hisakiti: *See*—
Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, 4,236,925, Cl. 75-229.000.

Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, to Hitachi, Ltd. Method of producing sintered material having high damping capacity and wearing resistance and resultant products. 4,236,925, Cl. 75-229.000.

Ooshiro, Hideyuki; and Chiba, Masakazu, to Shiroki Kinzoku; and Toyota Jidosha Kogyo Kabushiki Kaisha. Seat reclining apparatus. 4,236,753, Cl. 297-364.000.

Opfer, John C., to S & C Electric Company. Operating mechanism for a high-voltage switch. 4,237,357, Cl. 200-153.0SC.

Oppenlaender, Knut: *See*—
Krapf, Heinz; Oppenlaender, Knut; and Uhl, Guenter, 4,237,320, Cl. 568-609.000.

Oronzio de Nora Impianti Elettrochimici S.p.A.: *See*—
de Nora, Oronzio; Giuffre, Luigi; and Modica, Giovanni, 4,236,979, Cl. 204-98.000.

Orr, David A.; Gala, Hiren S.; and Scagnelli, George J., to Textron Inc. Method of positioning, gapping and applying stop to slide fastener. 4,236,292, Cl. 29-408.000.

ORTEC Incorporated: *See*—
Raudorf, Thomas W., 4,237,470, Cl. 357-30.000.

Orth, Hans-Dieter: *See*—
Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, 4,237,044, Cl. 260-112.00B.

Ortho Diagnostics, Inc.: *See*—
Weiner, Irving L., 4,237,424, Cl. 328-175.000.

Ortho Pharmaceutical Corporation: *See*—
Chen, Robert H. K., 4,237,054, Cl. 260-340.600.
Hajos, Zoltan G.; and Wachter, Michael P., 4,237,055, Cl. 260-340.600.
Kane, Vinayak V., 4,237,053, Cl. 260-333.000.

Ortofon Manufacturing A/S: *See*—
Hansen, Bjarne S.; and Gudmandsen, Robert, 4,237,348, Cl. 179-100.41R.
Hansen, Bjarne S.; and Gudmandsen, Robert, 4,237,349, Cl. 179-100.41D.

Osada, Yuichi: *See*—
Ishimaru, Toshiaki; Nishizawa, Hiroshi; and Osada, Yuichi, 4,237,251, Cl. 525-440.000.

Osaka Soda Co. Ltd.: *See*—
Matoba, Yasuo; Hashimoto, Akira; and Sugahara, Mikio, 4,237,247, Cl. 525-335.000.
Matoba, Yasuo; Kise, Yoshio; Yamada, Nobuo; Hashimoto, Akira; and Nakata, Tetsuya, 4,237,248, Cl. 525-335.000.

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Otis Engineering Corporation: *See*—
Ahangarzadeh, Mansour, 4,236,734, Cl. 285-26.000.

Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See*—
Torii, Sigeru; Tanaka, Hideo; and Kobayashi, Yuichi, 4,237,308, Cl. 562-122.000.

Oura, Hiroshi: *See*—
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Outboard Marine Corporation: *See*—
Fairchild, Harold W., 4,236,494, Cl. 123-148.0CC.
Metcalf, Silas L., 4,236,872, Cl. 416-146.00R.

Outokumpu Oy: *See*—
Makipirtti, Simo A. I.; and Kayhko, Jussi J., 4,236,700, Cl. 266-161.000.

Owen, Ronald P.: *See*—
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Kobashi, Toshiyuki; Ozaki, Masahiko; and Abe, Noboru, 4,237,256, Cl. 526-229.000.

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Blenkinsop, Philip T.; McLean, Graham W.; and Turner, David, 4,237,396, Cl. 310-154.000.

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Pako Corporation: *See*—
Anderson, Richard D.; and Wedel, John A., 4,236,815, Cl. 355-29.000.
Fauchier, Jess F., II, 4,236,818, Cl. 355-77.000.

Palitex Project Company GmbH: *See*—
Marbacher, Lothar, 4,236,374, Cl. 57-279.000.

Palmer, John P., to General Dynamics Corporation Pomona Division. Discretely positioned magnetic fiber optic scanner. 4,236,784, Cl. 350-96.200.

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Pampouchidis, Georgios; and Honig, Helmut, to Vianova Kunstharz, A.G. Cathodically depositable resins and process of preparing same. 4,237,038, Cl. 260-29.2TN.

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Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, 4,237,253, Cl. 526-75.000.

Papay, Andrew G.; and O'Brien, Joseph P., to Edwin Cooper, Inc. Lubricating and fuel compositions containing succinimide friction reducers. 4,237,020, Cl. 252-47.500.

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Payne, David A.; Park, Sang M.; and Jahnke, Otto C., 4,237,084, Cl. 264-61.000.

Parno Corp.: *See*—
Beck, Richard A.; and Presley, Glen T., 4,236,595, Cl. 180-243.000.

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Parsons, John H., to Fisons Limited. 1,2,4,5-Tetrazines. 4,237,127, Cl. 424-244.000.
Partin, Igor A.: *See—*
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.
Passovoy, Alexander E., to Anodex. Door frame assembly. 4,236,354, Cl. 49-504.000.
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., to Texaco Inc. Novel process for preparing aniline by catalytic reaction of vinyl cyclohexene and nitrobenzene. 4,237,070, Cl. 260-580.000.
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Davis, Austin E.; Cormier, Raymond G.; Lutz, Leo O.; Pauk, Henry T.; and Lones, Harry E., 4,236,483, Cl. 118-647.000.
Paul, Samuel J., to Sperry Corporation. Means for inhibiting the separation of toner particles from dispersant in a copy machine. 4,236,810, Cl. 355-10.000.
Paul Vahle KG: *See—*
Hillmann, Willi, 4,236,616, Cl. 191-59.100.
Paul, Volker: *See—*
Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,237,143, Cl. 424-270.000.
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Payne, David A.; Park, Sang M.; and Jahnke, Otto C., to University of Illinois Foundation. Method of producing internal boundary layer ceramic compositions. 4,237,084, Cl. 264-61.000.
Pechau, Gerhard: *See—*
Worgt, Walter; Pechau, Gerhard; Wyzgol, Ewald; and Franz, Manfred, 4,236,551, Cl. 140-1.000.
Pecota, Walter, to Wagner Electric Corporation. No-relight cigar lighter socket. 4,237,367, Cl. 219-265.000.
Pedain, Josef: *See—*
Noll, Klaus; Nachtkamp, Klaus; and Pedain, Josef, 4,237,264, Cl. 528-67.000.
Pedro-Palomer, Enrique. Rotatable and supporting mechanisms. 4,236,765, Cl. 308-9.000.
Pellerin Milnor Corporation: *See—*
Katzfey, James M., 4,236,393, Cl. 68-27.000.
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von Harpe, Hannes; Bottenbruch, Ludwig; Peltzer, Bernd; and Schulz-Walz, Hansjochen, 4,237,244, Cl. 525-171.000.
Penkina, Galina V.: *See—*
Chigirinsky, Alexandr A.; Danko, Vladimir G.; Grinchenko, Nikolai G.; Cheremisov, Ivan Y.; Tretevich, Roman I.; and Penkina, Galina V., 4,237,398, Cl. 310-214.000.
Pennella, John J.: *See—*
Manley, Claude E.; Pennella, John J.; Deaton, Donald J.; Crandall, Alan L.; and Hersey, James P., 4,236,546, Cl. 137-88.000.
Pennock, Theodorus A. F., to B.V. Neratoom. Sealing bushing. 4,236,721, Cl. 277-14.00V.
Per Sci, Inc.: *See—*
Erickson, Robert W., Jr.; and Stevens, G. Randall, 4,237,502, Cl. 360-78.000.
Permo S.A.: *See—*
Le Dall, Guy, 4,237,538, Cl. 364-500.000.
Perotto, Jean-Felix: *See—*
Fellrath, Jean; Perotto, Jean-Felix; Schneiter, Ali; and Grimm, Maurice, 4,237,548, Cl. 368-69.000.
Perrella, Emilio. Dispensing lid for a container of loose solid products. 4,236,656, Cl. 222-517.000.
Pertec Computer Corporation: *See—*
Barmache, Evan L.; and Brand, Abraham, 4,237,501, Cl. 360-75.000.
Peters, Klaus J.: *See—*
Greiner, Max; Peters, Klaus J.; Schelthas, Peter; Stiefel, Peter; and Nusser, Hermann, 4,237,079, Cl. 261-44.00A.
Petersen, Arthur W.: *See—*
Schoenholz, Daniel; Petersen, Arthur W.; and Northup, Marcus A., Jr., 4,236,935, Cl. 134-2.000.
Peterson, Raymond L.: *See—*
Bradley, Robert W.; Bray, Donald L.; and Peterson, Raymond L., 4,236,268, Cl. 12-146.00S.
Petrini, Julian L.: *See—*
Giacomotti, Richard A.; Giacomotti, Sally A.; Petrini, Julian L.; Petrini, Madeline A.; and Slater, Ted L., 4,237,376, Cl. 235-487.000.
Petrini, Madeline A.: *See—*
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Pfadenhauer, Berthold: *See—*
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.
Pfaller, Egon: *See—*
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Pfizer Inc.: *See—*
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,237,133, Cl. 424-248.520.
Campbell, Simon F.; Danilewicz, John C.; and Greengrass, Colin W., 4,237,138, Cl. 424-251.000.
Pfleger, Robert K., to Ecodyne Corporation. Liquid metering pump. 4,236,881, Cl. 417-502.000.
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Champseix, Alain A.; Gueremy, Claude G. A.; and Le Fur, Gerard R., 4,237,139, Cl. 424-258.000.
Phelp, Joseph P., executor: *See—*
Murphy, Clarence R.; Boehme, Robert E., deceased; Boehme, Helen J., legal representative; and Phelp, Joseph P., executor, 4,237,081, Cl. 264-9.000.
Philip, James H.: *See—*
Newbower, Ronald S.; and Philip, James H., 4,236,527, Cl. 128-692.000.
Phillips Petroleum Company: *See—*
Blackwell, Jennings P., 4,237,039, Cl. 260-29.20R.
Boultinghouse, Harold D., 4,237,156, Cl. 427-248.00A.
Childs, William V., 4,236,975, Cl. 203-14.000.
Fodor, Lawrence M., 4,237,029, Cl. 252-429.00B.
Hsieh, Henry L., 4,237,246, Cl. 525-332.000.
LaSpisa, Ronald J.; and Giles, Richard F., 4,237,082, Cl. 264-40.600.
Lewis, Robert J., 4,237,092, Cl. 422-62.000.
McCoy, Raymond D., 4,237,093, Cl. 422-62.000.
Middlebrook, Terence C., 4,236,715, Cl. 273-95.00R.
Stapp, Paul R., 4,237,071, Cl. 260-597.00B.
Stapp, Paul R., 4,237,312, Cl. 560-246.000.
Stapp, Paul R., 4,237,331, Cl. 585-845.000.
Pickard, George L.: *See—*
West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., 4,236,885, Cl. 425-514.000.
Pierburg GmbH & Co. KG: *See—*
Henke, Ulrich; and Meyer, Reinhard, 4,236,376, Cl. 60-602.000.
Pierce, Thomas V., Jr., to American Standard Inc. Protective electrical discharge device. 4,237,515, Cl. 361-127.000.
Pierce, Thomas V., Jr., to American Standard Inc. Protective electrical discharge device. 4,237,516, Cl. 361-127.000.
Pierrel, Michel; and Bellocci, Rio, to Pont-a-Mousson S.A. Process and installation for the continuous casting of tubular products. 4,236,571, Cl. 164-85.000.
Pioneer Electronic Corporation: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.
Sueyoshi, Susumu, 4,237,426, Cl. 330-296.000.
Yamada, Yozo; and Narui, Michinori, 4,237,505, Cl. 360-122.000.
Piovoso, Michael J.; Smith, Edmund H., Jr.; and Wolf, William E., to Du Pont de Nemours, E. I., and Company. On-line web inspection system. 4,237,539, Cl. 364-552.000.
Pitches, Brian E.; Murray, Robert M. S.; and Greig, Ian A., to Ferranti Limited. Price display setting arrangements. 4,237,537, Cl. 364-465.000.
Pitches, Ernest W.: *See—*
Burgess, George; and Pitches, Ernest W., 4,236,999, Cl. 209-250.000.
Pitney Bowes, Inc.: *See—*
Mol, Hans C.; and Brown, Michael A., 4,236,856, Cl. 414-54.000.
Platt Saco Lowell Limited: *See—*
Gillespy, Keith R., 4,236,319, Cl. 34-12.000.
Playfoot, Kerwin C.; and Goldstein, Norman P., to Westinghouse Electric Corp. Self-powered radiation detector with insulated inner and outer collector electrodes. 4,237,380, Cl. 250-370.000.
Plessey Handel und Investments AG: *See—*
Turner, Horace G.; and Taylor, Peter J., 4,236,572, Cl. 165-38.000.
Plimley, Raymond E.: *See—*
Backhurst, John R.; Fleischmann, Martin; Goodridge, Francis; and Plimley, Raymond E., 4,236,991, Cl. 204-272.000.
Plokhov, Viktor I.: *See—*
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.
Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
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Pohl, Ludwig: *See—*
Eidenschink, Rudolf; Krause, Joachim; and Pohl, Ludwig, 4,237,026, Cl. 252-299.000.
Pohlenz, Elmer E., to Aluminum Company of America. Induction heat sealing. 4,237,360, Cl. 219-10.410.
Polastri, Gian D.: *See—*
Monthony, James F.; Schwartz, Norman D.; Hollis, Donald F.; and Polastri, Gian D., 4,237,218, Cl. 435-2.000.
Poletto, John F.: *See—*
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,237,316, Cl. 562-503.000.

Policy, Jene A.; and Giuliano, Peter A. Apparatus for caster adjustment. 4,236,728, Cl. 280-661.000.

Poliniak, Eugene S.: *See*—
Desai, Nitin V.; and Poliniak, Eugene S., 4,237,208, Cl. 430-270.000.

Pollitt, John M.; and Nicod, Frederick, to Kangol Magnet Limited. Shoulder height adjuster for seat belt systems. 4,236,755, Cl. 297-483.000.

Polotsky, Leonid M.: *See*—
Gelperin, Nison I.; Polotsky, Leonid M.; and Konovalenko, Nikolai A., 4,236,958, Cl. 159-16.00S.

Polson, Jack R., to United States of America, Army. Electrolysis of lead azide. 4,236,982, Cl. 204-116.000.

Polysius AG: *See*—
Wessel, Josef A; Muller, Manfred; Heinemann, Otto; and Bredenholler, Norbert, 4,236,997, Cl. 209-144.000.

Pommerrenig, Dieter H., to Hamamatsu Corporation; and Hamamatsu TV Co, Ltd. Method of producing a semiconductor photodiode of indium antimonide and device thereof. 4,237,471, Cl. 357-30.000.

Pont-a-Mousson S.A.: *See*—
Pierrel, Michel; and Bellocci, Rio, 4,236,571, Cl. 164-85.000.

Poot, Martinus, to Machinefabriek Kreber B.V. Ball joint for two pipe ends. 4,236,738, Cl. 285-263.000.

Popoff, Michel; Brochon, Marie-Jose; and Brault, Georges, to Institut Pasteur. Device for multiple analyses. 4,237,096, Cl. 422-102.000.

Poppendiek, Heinz F., to Thermonetics Corporation. Means and techniques useful in establishing R values in insulation. 4,236,403, Cl. 73-15.00A.

Porta Systems Corp.: *See*—
De Luca, Paul V.; and Fasano, Michael C., 4,237,346, Cl. 179-35.000.

Porteous, Archibald: *See*—
Moore, David C.; Cooper, Edward W.; and Porteous, Archibald, 4,236,770, Cl. 312-184.000.

Porter, John W.: *See*—
Allen, Joseph C.; and Porter, John W., 4,237,017, Cl. 252-8.55D.

Porter, William P.: *See*—
Enelow, Michael R.; Levy, Michael; and Porter, William P., 4,237,536, Cl. 364-465.000.

Posleider, Grigory Y.: *See*—
Kartavtsev, Viktor M.; Posleider, Grigory Y.; Bytsak, Vladimir S.; and Bukhteev, Pavel I., 4,236,300, Cl. 29-736.000.

Post Office, The: *See*—
Bunting, John G.; Cross, Robin C.; Guard, David R.; Groves, Ian S.; Johnson, Edward G. T.; and Stevens, Alan E., 4,237,339, Cl. 179-1.0CN.

Poupko, Felice. Foldable furniture system. 4,236,460, Cl. 108-41.000.

Powell, James E., to Shell Oil Company. Cyclopropanecarboxylate pesticides. 4,237,164, Cl. 424-304.000.

Powell, Richard M.; and Anderson, Katherine H., to Medtronic, Inc. Program testing apparatus. 4,236,524, Cl. 128-419.0PT.

PPG Industries, Inc.: *See*—
Dahlberg, Lois A., 4,236,989, Cl. 204-252.000.
Hummel, Merritt J., 4,236,906, Cl. 65-27.000.
Thomas, Dean L.; Frank, Robert G.; and Claassen, George R., 4,236,909, Cl. 65-115.000.

Prengaman, Raymond D.; and McDonald, Herschel B., to RSR Corporation. Stable lead dioxide anode and method for production. 4,236,978, Cl. 204-57.000.

Prescott, Ernest F.: *See*—
Hildebrand, Donald L.; and Prescott, Ernest F., 4,236,756, Cl. 298-11.000.

Presley, Glen T.: *See*—
Beck, Richard A.; and Presley, Glen T., 4,236,595, Cl. 180-243.000.

Presta, John C.: *See*—
Yates, Derek N.; and Presta, John C., 4,236,386, Cl. 64-1.00S.

Priam: *See*—
Ho, Bin L.; and Guerini, Albert, 4,237,504, Cl. 360-106.000.

Prible, Glen V., to Combustion Engineering, Inc. Method for disposal of sodium waste material. 4,237,103, Cl. 423-207.000.

Price, Earl T., to Price, Earl T. Paster pilot sensor for press. 4,236,449, Cl. 101-228.000.

Prikkel, John, III. Thermal damper assembly having position controls. 4,236,668, Cl. 236-1.00G.

Printronix, Inc.: *See*—
Mayne, David W.; and Melissa, Raymond F., 4,236,835, Cl. 400-121.000.

Prittie, Allan R. Printing and die-cutting apparatus. 4,236,955, Cl. 156-353.000.

Procter & Gamble Company, The: *See*—
Kardouche, Nabil G., 4,237,155, Cl. 427-242.000.
Rudkin, Arthur L.; Clint, John H.; and Young, Kenneth, 4,237,016, Cl. 252-8.800.

Prohaska, Hans: *See*—
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Puccini, Richard E.: *See*—
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Puchta, Rolf: *See*—
Schwadike, Karl; Meyer, Dieter; and Puchta, Rolf, 4,236,320, Cl. 34-19.000.

Puech, Brigitte: *See*—
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Pugin, Andre: *See*—
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Pujman, Vojtech: *See*—
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.

Pullman Incorporated: *See*—
Varda, Eugene I., 4,236,458, Cl. 105-308.00R.

Quack, Jochen M.; Reng, Alwin; Balzer, Juliane; Engelhardt, Friedrich; and Ribka, Joachim, to Hoechst Aktiengesellschaft. Use of crosslinked polymers to increase the viscosity in cosmetic, pharmaceutical and technical compositions. 4,237,243, Cl. 525-154.000.

Queneau, Paul E.; and Schuhmann, Reinhardt, Jr. Process for oxygen sprinkle smelting of sulfide concentrates. 4,236,915, Cl. 75-74.000.

Quinto, Dennis T.: *See*—
Bhattacharya, Debanshu; Quinto, Dennis T.; and Holowaty, Michael O., 4,236,939, Cl. 148-2.000.

R. L. Drake Company: *See*—
Denker, Jerry B., 4,237,521, Cl. 361-384.000.

Raad, Bjorn H.: *See*—
Bjor, Hakon E.; and Raad, Bjorn H., 4,237,463, Cl. 343-180.000.

Rado, Theodore A.: *See*—
Morris, Alan J.; and Rado, Theodore A., 4,236,896, Cl. 23-293.00R.

Ragaller, Klaus, to BBC Brown, Boveri & Company Limited. Electrical compression switch with contact movement assistor. 4,237,356, Cl. 200-148.00A.

Ragle, Herbert U., to Burroughs Corporation. Semi-rigid magnetic recording disk module. 4,237,503, Cl. 360-99.000.

Raines, Dale A.; and Ainsworth, Oliver C., to Dow Chemical Company, The. Production of monoglycols from alkylene carbonates. 4,237,324, Cl. 568-858.000.

Rairden, John R., III: *See*—
Jackson, Melvin R.; and Rairden, John R., III, 4,237,193, Cl. 428-678.000.

Rall, Bernhard; and Hoppner, Dietrich, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit arrangement for stabilizing a direct current. 4,237,413, Cl. 323-4.000.

Ramsperger, David C., to McFarlin, Skip D., a part interest. System for automatically controlling automotive starting and accessory functions. 4,236,594, Cl. 180-167.000.

Ramus, Joseph S., to Mobil Oil Corporation. Algae biopolymer production. 4,236,349, Cl. 47-1.400.

Raseley, LeRoy J.; Forster, Leslie L.; and Hay, Edward F., to Ecolaire Incorporated. Tube bundle support plate. 4,236,575, Cl. 165-113.000.

Ratigan, Brian; Longley, Karl E.; and Roop, Robert N., to Fischer & Porter Co. Gravity flow disinfection contactor. 4,237,008, Cl. 210-205.000.

Ratliff, Roger D. Transport vehicle. 4,236,747, Cl. 296-24.00R.

Raudorf, Thomas W., to ORTEC Incorporated. Hyperpure germanium coaxial radiation detector. 4,237,470, Cl. 357-30.000.

Rauwendaal, Chris: *See*—
van Konynenburg, Peter V.; Au, Andrew; Rauwendaal, Chris; and Gotcher, Alan J., 4,237,441, Cl. 338-22.00R.

Raybon, James C., Jr.; Darby, Malcolm O.; and Derrick, Thomas V., Jr., to Allied Chemical Corporation. Highly oriented, partially drawn, untwisted, compact poly(ε-caproamide) yarn. 4,237,187, Cl. 428-399.000.

Rayboy, Eric R. Gasoline pump clip cap. 4,236,552, Cl. 141-98.000.

Raychem Corporation: *See*—
Horsma, David A.; and Diaz, Stephen H., 4,236,949, Cl. 156-49.000.
van Konynenburg, Peter V.; Au, Andrew; Rauwendaal, Chris; and Gotcher, Alan J., 4,237,441, Cl. 338-22.00R.

Rayford, Warren E.; and Wing, Robert E., to United States of America, Agriculture. Crosslinked starch halohydrins and their nitrogen-containing substitution products. 4,237,271, Cl. 536-47.000.

Raymond Corporation, The: *See*—
McCormick, Edward J., 4,236,862, Cl. 414-633.000.

Raytheon Company: *See*—
Kemp, Wayne T., 4,236,503, Cl. 126-215.000.

RCA Corporation: *See*—
Deckert, Cheryl A.; Comizzoli, Robert B.; and Schnable, George L., 4,237,379, Cl. 250-302.000.
Desai, Nitin V.; and Poliniak, Eugene S., 4,237,208, Cl. 430-270.000.
Dougherty, Robert S., 4,237,210, Cl. 430-318.000.
Harford, Jack R., 4,237,490, Cl. 358-174.000.
Hollingsworth, Richard J., 4,237,472, Cl. 357-43.000.
Kosonocky, Walter F.; and Angle, Rodney L., 4,237,383, Cl. 250-578.000.
Ladany, Ivan, 4,237,474, Cl. 357-81.000.
McCoy, John F., 4,237,438, Cl. 335-214.000.
Olson, Charles L.; and Hacke, Joseph F., 4,237,491, Cl. 358-223.000.
Rhodes, Randy D., 4,237,423, Cl. 328-133.000.
Roach, William R.; and Sheng, Ping, 4,236,823, Cl. 356-351.000.
Weimer, Paul K., 4,237,477, Cl. 358-44.000.

Read, James L.; and Morgan, William K., to F. T. Read & Sons, Inc. Shaker assembly for screening and scalping. 4,237,000, Cl. 209-319.000.

Recaro GmbH & Co.: *See*—
Strien, Werner, 4,236,751, Cl. 297-216.000.

Reck, Richard A., to Akzona Incorporated. Process for preparing quaternary ammonium compositions. 4,237,064, Cl. 260-459.00A.

Redmond, John P.: *See—*
Merlina, Joseph F.; Redmond, John P.; Ulbrich, George; and Wagner, Richard M., 4,236,777, Cl. 339-17.0CF.

Reed Ltd.: *See—*
Bialski, Alexander; Gentile, Camillo; and Sepall, Ola, 4,236,676, Cl. 241-74.000.

Reed, Philip W.; and Alexander, John D., to Conoco, Inc. Method and apparatus for sonic velocity type water cut measurement. 4,236,406, Cl. 73-61.10R.

Reen, Orville W., to Allegheny Ludlum Steel Corporation. Phosphorus-iron powder and method of producing soft magnetic material therefrom. 4,236,945, Cl. 148-105.000.

Reichenberger, Arthur M. Beverage portion controller. 4,236,553, Cl. 141-198.000.

Reifschneider, Walter, to Dow Chemical Company, The. N-(4-Chloro-2-methylphenyl)-N-hydroxy methanimidamide and its pesticidal use. 4,237,168, Cl. 424-326.000.

Reinders, Jannes, to Jannes Reinders & Noord-Nederlandache Machinefabriek B. V. Gripping-lifting apparatus. 4,236,744, Cl. 294-88.000.

Reinehr, Dieter: *See—*
Bader, Rolf; and Reinehr, Dieter, 4,237,275, Cl. 542-417.000.

Reinhall, Rolf B. Method of producing fiber pulp by grinding fibrous material in a steam environment. 4,236,959, Cl. 162-23.000.

Reischauer, Axel, to Gold- und Silber- Scheideanstalt Oberstein Franz Reischauer. Frame for a case, wallet or similar device. 4,236,560, Cl. 150-46.000.

Remi, Jean-Pierre: *See—*
Kiehl, Jean-Pierre; Remi, Jean-Pierre; and Schoennahl, Jacques R. P., 4,236,931, Cl. 106-64.000.

Reng, Alwin: *See—*
Quack, Jochen M.; Reng, Alwin; Balzer, Juliane; Engelhardt, Friedrich; and Ribka, Joachim, 4,237,243, Cl. 525-154.000.

Resch, Reinhard, to Daimler-Benz Aktiengesellschaft. Brake valve especially for motor vehicles. 4,236,763, Cl. 303-54.000.

Retzloff, James B.: *See—*
Davis, Bryan T.; and Retzloff, James B., 4,236,898, Cl. 44-66.000.

Reuland, Joachim: *See—*
Heitmann, Uwe; Steiniger, Wolfgang; Holznagel, Uwe; Kaebernick, Hartmut; Pfannmuller, Joachim; and Reuland, Joachim, 4,236,534, Cl. 131-21.00B.

Reymond, Gilbert: *See—*
Deglin, Rene'; and Reymond, Gilbert, 4,237,545, Cl. 364-900.000.

Rhodes, Randy D., to RCA Corporation. Digital phase detector. 4,237,423, Cl. 328-133.000.

Rhone-Poulenc Industries: *See—*
Aviron-Violet, Paul; and Dang, Tuan-Phat, 4,237,072, Cl. 260-601.00R.
Dougier, Patrick; Fouassier, Claude; and Latourrette, Bertrand, 4,237,027, Cl. 252-301.40H.

Rhudy, John S.: *See—*
Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., 4,236,545, Cl. 137-13.000.

Ribka, Joachim: *See—*
Balzer, Juliane; Engelhardt, Friedrich; Ribka, Joachim; and Schidlo, Wolfram, 4,237,249, Cl. 525-369.000.
Quack, Jochen M.; Reng, Alwin; Balzer, Juliane; Engelhardt, Friedrich; and Ribka, Joachim, 4,237,243, Cl. 525-154.000.

Rice, Thomas K., to Minnesota Mining and Manufacturing Company. Method for the assay of classes of antigen-specific antibodies. 4,236,893, Cl. 23-230.00B.

Rich Products Corporation: *See—*
Kahn, Marvin L.; and Eapen, Kuttikandathil E., 4,237,146, Cl. 426-330.000.

Richard, Patricia A. Method of screening for sickle cell disease by detection of porphyrins and porphyrin metabolites in human dentition. 4,236,526, Cl. 128-633.000.

Richards, Paul E. Portable self-contained amplifier and loudspeaker apparatus. 4,237,341, Cl. 179-1.0MG.

Richards, William: *See—*
Whitney, Donald B.; Grolman, Bernard; and Richards, William, 4,236,793, Cl. 351-21.000.

Richardson Company, The: *See—*
Lombardi, Louis J.; and Coyne, Roy J., 4,237,185, Cl. 428-337.000.

Richter Gedeon Vegyeszeti Gyar RT: *See—*
Horvath, Tibor; Csanyi, Endre; Eckhardt, Sandor; and Kiraly nee Vida, Emilia, 4,237,273, Cl. 536-53.000.

Richter, Hans: *See—*
Engl, Robert; and Richter, Hans, 4,237,283, Cl. 544-186.000.

Ricoh Company, Ltd.: *See—*
Fujimoto, Sakae, 4,236,707, Cl. 271-11.000.
Hirose, Akira; Sugita, Keiji; and Takagi, Yasuzi, 4,236,811, Cl. 355-14.00R.
Yamaguchi, Shingo, 4,237,494, Cl. 358-280.000.

Riedl, Franz, to Wacker Werke GmbH & Co. KG. Unbalance oscillation generator. 4,236,417, Cl. 74-87.000.

Rijnders, Willem, to Hunter Douglas International N.V. Prefabricated wall panel. 4,236,366, Cl. 52-580.000.

Risman, Per O. G.; and Bengtsson, Nils E., to Husqvarna Aktiebolag. Method of preparing foodstuffs containing coagulating proteins and a device for performing the method. 4,237,145, Cl. 426-241.000.

Ritchie, Robert J.: *See—*
Allcock, Harry R.; and Ritchie, Robert J., 4,237,263, Cl. 528-399.000.

Rittenbach, Otto E., to United States of America, Army. Radar antenna employing phase shifted collinear dipoles. 4,237,464, Cl. 343-814.000.

Roach, William R.; and Sheng, Ping, to RCA Corporation. Diffractometer for measuring signal depth and width. 4,236,823, Cl. 356-351.000.

Roark, Charles F. Solar energy collector. 4,236,506, Cl. 126-439.000.

Robbins, Lanny A., to Dow Chemical Company, The. Method of removing contaminants from water. 4,236,973, Cl. 203-10.000.

Robbins, Murray; and Staudinger, Annemarie, to Bell Telephone Laboratories, Incorporated. Production of single phase alloy parts by reduction of oxides. 4,236,924, Cl. 75-211.000.

Robert Bosch GmbH: *See—*
Greiner, Max; Peters, Klaus J.; Schelthas, Peter; Stiefel, Peter; and Nusser, Hermann, 4,237,079, Cl. 261-44.00A.
Mohr, Adolf; and Corbach, Rainer, 4,237,397, Cl. 310-154.000.

Roberts, David E., to General Motors Corporation. Catalytic converter with housing-bed-plenum reinforcing and spacing means. 4,237,098, Cl. 422-171.000.

Roberts, David E.: *See—*
Alley, William L.; Roberts, David E.; Root, Charles J.; and Foster, Michael R., 4,237,099, Cl. 422-171.000.

Roberts, John M. C.: *See—*
Hughes, John F.; and Roberts, John M. C., 4,237,028, Cl. 252-359.00B.

Roberts, Robert, to Washington University. Radioimmunoassay assay and reagents for MB isoenzyme of CK. 4,237,219, Cl. 435-7.000.

Roberts, William L. Vehicle clearance detector. 4,237,446, Cl. 340-61.000.

Robinson, John W.: *See—*
Dietrich, Ralph N.; Robinson, John W.; and Howell, Stephen L., 4,236,436, Cl. 84-1.260.
Howell, Stephen L.; Robinson, John W.; and Kube, Donald, 4,236,437, Cl. 84-1.260.

Robinson, Paul R.: *See—*
Bamberger, Carlos E.; and Robinson, Paul R., 4,237,105, Cl. 423-306.000.

Roccaforte, Harry I., to Champion International Corporation. Container having an internal support platform and blank therefor. 4,236,662, Cl. 229-39.00B.

Rock, Edward B.: *See—*
Strongin, Myron; Ghosh, Arup K.; Wiesmann, Harold J.; Rock, Edward B.; and Lutz, Harry A., III, 4,237,151, Cl. 427-74.000.

Rock, Erich; and Mages, Bernhard, to Julius Blum Gesellschaft m.b.H. Furniture connector. 4,236,848, Cl. 403-406.000.

Rockenfeller, John D.; and Llewellyn, Thomas E., to Textron Inc. Pressure change responsive device. 4,237,354, Cl. 200-83.00C.

Rockerath, John L.; and Schreck, Harold J., to Cluett, Peabody & Co., Inc. Sewing machine material preassembly system. 4,236,472, Cl. 112-304.000.

Rockwell International Corporation: *See—*
Gehle, Richard W., 4,237,086, Cl. 264-130.000.

Rodgers, Aubrey, to United States of America, Army. High-g gimbal platform. 4,236,414, Cl. 74-5.100.

Rody, Jean; and Karrer, Friedrich, to Ciba-Geigy Corporation. Piperidine containing malonic acid derivatives. 4,237,297, Cl. 546-189.000.

Roelofs, Hendrik: *See—*
Wesselink, Gustaaf A.; Roelofs, Hendrik; and Van Bommel, Cornelis H. M., 4,237,400, Cl. 313-204.000.

Roessler, Peter: *See—*
Kabbe, Hans-Joachim; Widdig, Arno; Stendel, Wilhelm; and Roessler, Peter, 4,237,162, Cl. 424-283.000.

Rogers, Donald E.: *See—*
Van Bennekom, Carl F.; Rogers, Donald E.; and Scannell, Edward F., 4,237,418, Cl. 324-150.000.

Rogers, Norman H.: *See—*
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,237,161, Cl. 424-283.000.

Rogers, Robert. Portable cargo brace. 4,236,854, Cl. 410-121.000.

Rohm and Haas Company: *See—*
Frankel, Lawrence S., 4,237,242, Cl. 525-119.000.
Miller, George A.; and Owen, Ronald P., 4,237,158, Cl. 424-273.000.

Rohner, Peter, to Kabel-und Metallwerke Gutehoffnungshuette AG. Method of fabricating heat transfer conduits. 4,236,288, Cl. 29-157.30H.

Rokach, Joshua: *See—*
Hamel, Pierre A.; and Rokach, Joshua, 4,237,160, Cl. 424-275.000.

Roman, Steven A., to Shell Oil Company. Oxyimino-substituted cyclopropanecarboxylate pesticides. 4,237,123, Cl. 424-200.000.

Roman, Steven A., to Shell Oil Company. Hydrazono-substituted cyclopropanecarboxylate pesticides. 4,237,163, Cl. 424-304.000.

Roop, Robert N.: *See—*
Ratigan, Brian; Longley, Karl E.; and Roop, Robert N., 4,237,008, Cl. 210-205.000.

Roose, Vambola I.: *See—*
Lippmaa, Endel T.; and Roose, Vambola I., 4,237,444, Cl. 338-270.000.

Root, Charles J.: *See—*
Alley, William L.; Roberts, David E.; Root, Charles J.; and Foster, Michael R., 4,237,099, Cl. 422-171.000.

Rosan, Inc.: *See—*
Rosan, Jose, Jr., 4,236,495, Cl. 123-188.00S.

Rosan, Jose, Jr., to Rosan, Inc. Self locking valve seat insert. 4,236,495, Cl. 123-188.00S.

Rosen, Perry: *See—*
Holland, George W.; and Rosen, Perry, 4,237,060, Cl. 260-346.220.

Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,237,276, Cl. 542-426.000.

Ross, Svante B.: *See—*
Lindberg, Ulf M. A.; Ross, Svante B.; Thorberg, Seth-Olov; and O gren, Sven O., 4,237,311, Cl. 560-173.000.

Rossing, Martin A.: *See—*
McDonald, Ray S.; and Rossing, Martin A., 4,236,522, Cl. 128-419.0PG.

Roth, Gunther, to Thyssen Industrie AG. Method and apparatus for the electroinduction heating of metal workpieces. 4,237,359, Cl. 219-10.410.

Roth, Irving; and Davidson, Ralph, to Sperry Corporation. Image observation apparatus. 4,237,492, Cl. 358-225.000.

Rothman, Edward A.: *See—*
Sherman, Robert; Rothman, Edward A.; and Mandelbaum, William, 4,236,873, Cl. 416-204.00R.

Rouxel, Jean; and Trichet, Luc, to Agence Nationale de Valorisation de la Recherche. Ionic conductivity materials, suitable for constituting solid electrolytes for dry cells and batteries. 4,237,201, Cl. 429-104.000.

Rowe Industries Inc., Division of Groman Corporation: *See—*
Murray, Joseph E.; and Mocek, Aloysius M., Jr., 4,237,530, Cl. 362-418.000.

RSR Corporation: *See—*
Prengaman, Raymond D.; and McDonald, Herschel B., 4,236,978, Cl. 204-57.000.

Rudd, Frederick V.; and Bracewell, Tom, deceased (by Bracewell, Bertha, administratrix), to British Leyland UK Limited. Method for the gaseous nitriding of ferrous-based components. 4,236,942, Cl. 148-16.600.

Rude, Harold E.: *See—*
Newell, Richard G.; and Rude, Harold E., 4,237,252, Cl. 525-454.000.

Rudkin, Arthur L.; Clint, John H.; and Young, Kenneth, to Procter & Gamble Company, The. Textile conditioning compositions with low content of cationic materials. 4,237,016, Cl. 252-8.800.

Rudolf Wittner GmbH u. Co.: *See—*
Harle, Friedrich, 4,237,549, Cl. 368-134.000.

Rudy, Norman A.; and Fredrickson, Lloyd C., to Amfac Foods, Inc. Crustacean shelling apparatus. 4,236,277, Cl. 17-73.000.

Ruge, Hinrich: *See—*
Zwintscher, Wolfgang; Kittel, Horst; and Ruge, Hinrich, 4,237,361, Cl. 219-76.100.

Rundlof, Lars N., to AB Volvo. Voltage regulator for a generator. 4,237,412, Cl. 322-28.000.

Rushmore, Dean F., to Societe d'Assistance Technique pour Produits Nestle S.A. Decaffeination of fatty materials. 4,237,288, Cl. 544-275.000.

Ruskin, Frank: *See—*
Fellner, Van N.; and Ruskin, Frank, 4,236,649, Cl. 221-90.000.

Ruspa, Giacomo: *See—*
Alpini, Alessandro; and Ruspa, Giacomo, 4,236,407, Cl. 73-118.000.

Russow, Jurgen: *See—*
Medic, Nikolaj; Auel, Theodor; Bergner, Dieter; and Russow, Jurgen, 4,236,980, Cl. 204-98.000.

Ruzic, Hugo, to International Standard Electric Corporation. Telephone handset. 4,237,350, Cl. 179-103.000.

Rybin, Igor V.: *See—*
Meierovich, Eduard A.; Shenderovich, Pavel B.; Chalisov, Jury I.; Golenchenko, Valery A.; Rybin, Igor V.; and Sukhushin, Vitaly B., 4,237,507, Cl. 361-19.000.

S.A.Y. Industries, Inc.: *See—*
Humphries, Romilly H., 4,236,655, Cl. 222-465.000.

S & C Electric Company: *See—*
Opfer, John C., 4,237,357, Cl. 200-153.0SC.

Sabo, Irving. Woodworking technique for forming corners. 4,236,558, Cl. 144-318.000.

Saft Leclanche: *See—*
Gelin, Guy, 4,237,199, Cl. 429-94.000.

Sagami Chemical Research Center: *See—*
Tsuchihashi, Genichi; and Ogura, Katsuyuki, 4,237,298, Cl. 546-238.000.

Sagi, Tadao: *See—*
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Hiromitsu; Suzuki, Kinzaburo; Okubo, Azuma; Nakanoya, Takishi; Miura, Katsunori; and Sagi, Tadao, 4,237,233, Cl. 435-254.000.

Saia, Carman R., to Kasabell Industries. Combined fish lure, bait holder and artificial bait. 4,236,342, Cl. 43-17.600.

Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, to Toyama Chemical Company, Limited. Intermediate for cephalosporin type compound. 4,237,280, Cl. 544-27.000.

Saint-Gobain Industries: *See—*
Mairlot, Henri, 4,236,907, Cl. 65-104.000.

Saito, Hiroshi; and Adachi, Chihiro, to Matsushita Electric Industrial Co., Ltd. Buzz cancelling system for television receiver. 4,237,485, Cl. 358-197.000.

Saito, Katsuhide: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Maehara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,237,132, Cl. 424-248.520.

Saito, Teruo: *See—*
Kitagawa, Sadao; Okada, Isao; Saito, Teruo; Masukawa, Shoichi; Watanabe, Yoshihisa; and Imanari, Makoto, 4,237,254, Cl. 526-122.000.

Saitoh, Osamu: *See—*
Horiba, Atushi; Saitoh, Osamu; and Ishida, Kozo, 4,236,827, Cl. 356-437.000.

Sakai, Hideo: *See—*
Mazaki, Tadashige, 4,237,178, Cl. 428-242.000.

Sakakibara, Shumpei, to Ajinomoto Company, Incorporated. Peptide derivative. 4,237,047, Cl. 260-112.50R.

Sakamoto, Hitoshi, to Sony Corporation. Driving circuit for piezo-electric multimorph transducer. 4,237,399, Cl. 310-317.000.

Salem Corporation: *See—*
Heard, Harold; and Wilt, Charles R., Jr., 4,236,318, Cl. 34-10.000.

Salzmann, Donald F., to Autoline Supply Company. Bleeder kit for bleeding a master cylinder. 4,236,549, Cl. 137-343.000.

Sandco Ltd.: *See—*
Weinhold, Otto, 4,236,882, Cl. 425-6.000.

Sander, Gunter; and Gunther, Roland, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Extensible telescopic coal bunker for subsurface mining. 4,236,630, Cl. 198-577.000.

Sanderson, Hendrik J., to U.S. Philips Corporation. Method of controlling the position of a write-read head and device for carrying out the method. 4,237,500, Cl. 360-77.000.

Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,236,392, Cl. 68-5.00E.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Continuous processing apparatus for treatment of knit fabric material. 4,236,392, Cl. 68-5.00E.

Sandoz Ltd.: *See—*
Gadient, Fulvio, 4,237,296, Cl. 546-126.000.
Mislin, Roland, 4,237,284, Cl. 544-189.000.

Sandvik Aktiebolag: *See—*
Lindholm, Leif S.; and Lindstrom, Jan N., 4,236,926, Cl. 75-238.000.
Yaman, Melih; Gustavsson, Kjell; and Hammer, Orjan, 4,236,944, Cl. 148-35.000.

Sankyo Company, Limited: *See—*
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,237,294, Cl. 546-20.000.

Sankyo Electric Company Limited: *See—*
Terauchi, Kiyoshi, 4,236,878, Cl. 417-269.000.

Sansum, Victor H. Photoelectric lamp control with sun-synchronized timer. 4,237,377, Cl. 250-214.00R.

Sanyo Kiki Kabushiki Kaisha: *See—*
Imai, Kishio, 4,236,439, Cl. 85-5.0CP.

Sartorius GmbH: *See—*
Knothe, Erich; and Melcher, Franz-Josef, 4,236,590, Cl. 177-200.000.

Sartorius, Rudolf: *See—*
Steppich, Walter; and Sartorius, Rudolf, 4,237,073, Cl. 260-604.0AC.

Saruwatari, Mitsuyoshi: *See—*
Kitamura, Minoru; Hayashi, Tsutomu; Moritsugi, Takeharu; and Saruwatari, Mitsuyoshi, 4,236,914, Cl. 75-58.000.

Sasaki, Yutaro: *See—*
Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki, 4,237,266, Cl. 536-1.000.

Satin, Morton, to Multimarques Inc. High fiber white bread. 4,237,170, Cl. 426-21.000.

Sato, Katsuziro: *See—*
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, 4,236,901, Cl. 55-276.000.

Sato, Masaaki, to Olympus Optical Company Limited. Tape recorder with table computer. 4,237,540, Cl. 364-705.000.

Sato, Moriyuki: *See—*
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, 4,237,269, Cl. 536-17.00R.
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, 4,237,272, Cl. 536-17.00R.

Sato, Reisuke: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.

Satoh, Mitsuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera film stop position adjusting mechanism. 4,236,800, Cl. 354-213.000.

Savage, David S.: *See—*
Carlyle, Ian C.; Sleigh, Thomas; and Savage, David S., 4,237,126, Cl. 424-241.000.

Savin Corporation: *See—*
Tusso, Robert J.; Feher, Peter; Schultes, Max; and Eberlein, Dietmar, 4,236,808, Cl. 355-8.000.

Savin, Nikolai I.; Khramov, Dmitry A.; Filippov, Vladimir J.; and Bugrov, Valery V. Nuclear reactor. 4,236,966, Cl. 176-30.000.

Savino, Alfred T. Cart storage device. 4,236,697, Cl. 256-1.000.

Sawada, Daisaku: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.

Scagnelli, George J.: *See—*
Orr, David A.; Gala, Hiren S.; and Scagnelli, George J., 4,236,292, Cl. 29-408.000.

Scannell, Edward F.: *See—*
Van Bennekom, Carl F.; Rogers, Donald E.; and Scannell, Edward F., 4,237,418, Cl. 324-150.000.

Scardera, Michael; and Schifilliti, Garrett B., to Olin Corporation. Process for textile bleaching with dibasic magnesium hypochlorite. 4,236,891, Cl. 8-108.00A.

Scattergood, Edgar M., to Merck & Co., Inc. Pretreatment of microcarriers for cell culture. 4,237,033, Cl. 260-6.000.

Schaefer Marine, Inc.: *See*—
Merry, Carl A., 4,236,475, Cl. 114-90.000.

Schael, Wilfried: *See*—
Schindler, Johannes G.; and Schael, Wilfried, 4,236,987, Cl. 204-195.00M.

Schaetz, Robert: *See*—
Boettge, Horst; Mitzel, Wilhelm; Bernardi, Herbert; Geier, Josef; Osswald, Norbert; von Aschwege, Gerd; and Schaetz, Robert, 4,236,639, Cl. 209-534.000.

Schafer, Ernst-Dieter: *See*—
Haar, Lucas H.; and Schafer, Ernst-Dieter, 4,236,760, Cl. 303-6.00C.

Schafer, Ewald: *See*—
Braun, Franz; and Schafer, Ewald, 4,236,550, Cl. 139-421.000.

Schaub, Robert E.: *See*—
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,237,316, Cl. 562-503.000.

Scheidl, Franz: *See*—
Korbanka, Helmut; and Scheidl, Franz, 4,237,043, Cl. 260-45.75S.

Schelthas, Peter: *See*—
Greiner, Max; Peters, Klaus J.; Schelthas, Peter; Stiefel, Peter; and Nusser, Hermann, 4,237,079, Cl. 261-44.00A.

Schering, Aktiengesellschaft: *See*—
Kieslich, Klaus, 4,237,220, Cl. 435-58.000.

Schering Corporation: *See*—
McCombie, Stuart W., 4,237,051, Cl. 260-245.20R.

Schetina, Otto: *See*—
Sigott, Siegfried; Kogler, Peter; Schetina, Otto; and Zitz, Alfred, 4,236,627, Cl. 198-514.000.

Schidlo, Wolfram: *See*—
Balzer, Juliane; Engelhardt, Friedrich; Ribka, Joachim; and Schidlo, Wolfram, 4,237,249, Cl. 525-369.000.

Schiedt, Ludwig: *See*—
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, 4,237,291, Cl. 544-346.000.

Schievelbein, Vernon H., to Texaco Inc. Surfactant flooding oil recovery process. 4,237,018, Cl. 252-8.55D.

Schifilliti, Garrett B.: *See*—
Scardera, Michael; and Schifilliti, Garrett B., 4,236,891, Cl. 8-108.00A.

Schillings, Dieter, to International Harvester Company. Stabilizer for tractor hitch. 4,236,724, Cl. 280-460.00A.

Schindler, Johannes G.; and Schael, Wilfried, to Dr. E. Fresenius Chemisch Pharmazeutische Industrie KG Apparatebau KG. Electrode having membrane with ion selective properties. 4,236,987, Cl. 204-195.00M.

Schirutschke, Rudolf: *See*—
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, 4,237,291, Cl. 544-346.000.

Schlamp, Gunther: *See*—
Seibold, Klaus; and Schlamp, Gunther, 4,236,948, Cl. 148-188.000.

Schlig, Eugene S., to International Business Machines Corporation. CCD Parallel-serial and serial-parallel charge transfer method and apparatus. 4,236,830, Cl. 357-24.000.

Schlimper, Hans-Ulrich: *See*—
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, 4,237,318, Cl. 562-609.000.

Schlotthauer, Harley L.: *See*—
Lange, Robert G.; and Schlotthauer, Harley L., 4,237,260, Cl. 528-230.000.

Schlough, James R., to Harris Corporation. Signature conveyor for use with inserter and stitcher. 4,236,706, Cl. 270-53.000.

Schluns, Steven M. Icebox for a recreational vehicle. 4,236,749, Cl. 296-156.000.

Schmelzer Corporation: *See*—
Benjamin, Benjamin C.; and LaVene, Leon F., 4,237,076, Cl. 261-23.00A.
Benjamin, Benjamin C., 4,237,078, Cl. 261-39.00B.

Schmid, Jurgen; and Eggert, Winfried, to Boehringer Ingelheim GmbH. Testing apparatus for tablet-shaped specimens. 4,236,413, Cl. 73-821.000.

Schmidhuber, Volker: *See*—
Aeschlimann, Hans-Peter; Schmidhuber, Volker; and Kappes, Werner, 4,236,666, Cl. 233-26.000.

Schmidt, Klaus; and Grass, Klaus, to Endress u. Hauser GmbH u. Co. Electromechanical filling-level measurement. 4,236,314, Cl. 33-126.600.

Schmidt, Rolf; and Berlin, Herbert, to Hauni-Werke Korber & Co. KG. Apparatus for convoluting adhesive-coated uniting bands around rod-shaped articles. 4,236,535, Cl. 131-21.00R.

Schmitt, Charles R.: *See*—
DeMonbrun, James R.; Schmitt, Charles R.; and Schreyer, James M., 4,237,090, Cl. 422-13.000.

Schmitz, Floyd A., to J. I. Case Company. Vehicle stabilizer assembly. 4,236,643, Cl. 212-145.000.

Schnable, George L.: *See*—
Deckert, Cheryl A.; Comizzoli, Robert B.; and Schnable, George L., 4,237,379, Cl. 250-302.000.

Schneiter, Ali: *See*—
Fellrath, Jean; Perotto, Jean-Felix; Schneiter, Ali; and Grimm, Maurice, 4,237,548, Cl. 368-69.000.

Schnicke, Mathias: *See*—
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.

Schoenholz, Daniel; Petersen, Arthur W.; and Northup, Marcus A., Jr., to Church & Dwight Co., Inc. Method for removing organic acid soil from surfaces. 4,236,935, Cl. 134-2.000.

Schoennahl, Jacques R. P.: *See*—
Kiehl, Jean-Pierre; Remi, Jean-Pierre; and Schoennahl, Jacques R. P., 4,236,931, Cl. 106-64.000.

Scholl, Frederick R.: *See*—
Woolhouse, Geoffrey R.; Huggins, Harold A.; Anderson, Stephen I.; and Scholl, Frederick R., 4,236,296, Cl. 29-583.000.

Scholl, Hans-Joachim: *See*—
Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,237,143, Cl. 424-270.000.

Scholten, Heinz: *See*—
Capelle, Anton; and Scholten, Heinz, 4,237,040, Cl. 260-29.20N.

Schonberger, Milton. Method of trimming thermistor or other electrical components and the contacts thereof. 4,236,298, Cl. 29-610.000.

Schossow, George W. Chimney stack exhaust unit. 4,236,443, Cl. 98-58.000.

Schott, Charles M., Jr., to Gloucester Engineering Co., Inc. Internal air cooling of tubular plastic film. 4,236,884, Cl. 425-72.00R.

Schreck, Harold J.: *See*—
Rockerath, John L.; and Schreck, Harold J., 4,236,472, Cl. 112-304.000.

Schreiner, Siegfried: *See*—
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, 4,237,318, Cl. 562-609.000.

Schreyer, Gerd: *See*—
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Schreyer, Gerd, 4,237,299, Cl. 546-250.000.

Schreyer, James M.: *See*—
DeMonbrun, James R.; Schmitt, Charles R.; and Schreyer, James M., 4,237,090, Cl. 422-13.000.

Schreyer, Kenneth D.; Leverentz, Earl T.; and Nusz, Thomas R., to Columbus McKinnon Corporation. Trolley suspension. 4,236,456, Cl. 105-154.000.

Schroeder, Becky J. Multilayered electroluminescent light assembly adaptable for reading and writing in the dark. 4,237,381, Cl. 250-462.000.

Schuh, Ernst. Method for cleaning articles by spraying. 4,236,936, Cl. 134-7.000.

Schuhmann, Reinhardt, Jr.: *See*—
Queneau, Paul E.; and Schuhmann, Reinhardt, Jr., 4,236,915, Cl. 75-74.000.

Schultes, Max: *See*—
Tusso, Robert J.; Feher, Peter; Schultes, Max; and Eberlein, Dietmar, 4,236,[illegible]8, Cl. 355-8.000.

Schulz-Walz, Han[illegible]ochen: *See*—
von Harpe, Hannes; Bottenbruch, Ludwig; Peltzer, Bernd; and Schulz-Walz, Hansjochen, 4,237,244, Cl. 525-171.000.

Schur, Paul E.; and Abolafia, Andrew I., to Schur, Paul E. Apparatus for producing electrical energy. 4,237,391, Cl. 310-10.000.

Schwadike, Karl; Meyer, Dieter; and Puchta, Rolf, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Method and apparatus for conditioning and drying laundry. 4,236,320, Cl. 34-19.000.

Schwartz, Alfred A.: *See*—
Lantz, Robert H.; and Schwartz, Alfred A., 4,237,458, Cl. 340-739.000.

Schwartz, Norman D.: *See*—
Monthony, James F.; Schwartz, Norman D.; Hollis, Donald F.; and Polastri, Gian D., 4,237,218, Cl. 435-2.000.

Schwarze, Rigobert. Tube bending machine. 4,236,398, Cl. 72-157.000.

Schweizer, Alfred D.; Erskine, William G.; and Turpin, Daniel, to Gallaher Limited. Smoking rod wrapper. 4,236,532, Cl. 131-9.000.

Science Union et Cie: *See*—
Duhault, Jacques, 4,237,165, Cl. 424-308.000.

Scranton, Robert J., to Mead Corporation, The. Paper transport system for an ink jet printer. 4,237,466, Cl. 346-75.000.

Sealy, L. Gregg: *See*—
Mosby, John S., Jr., 4,236,539, Cl. 131-175.000.

Seffrood, Leroy J. Forage press. 4,236,444, Cl. 100-65.000.

Seibold, Klaus; and Schlamp, Gunther, to Demetron Gesellschaft fur Elektronik Werkstoffe mbH. Process for doping semiconductor crystals. 4,236,948, Cl. 148-188.000.

Seidel, Hans: *See*—
Gauhl, Helmgard; and Seidel, Hans, 4,237,221, Cl. 435-15.000.

Seiden, Lewis J., to T-Bar Incorporated. Patch module for connecting to off-line transmission lines of a switchably selected pair of transmission lines. 4,237,352, Cl. 200-51.030.

Seilly, Alec H., to Lucas Industries Limited. Operating mechanism for a dot matrix printer. 4,236,837, Cl. 400-124.000.

Sekiguchi, Takeshi, to Canon Kabushiki Kaisha. Television camera with test pattern. 4,237,475, Cl. 358-10.000.

Sekiya, Fukuo: *See*—
Ebihara, Heihachiro; Sekiya, Fukuo; and Uchino, Misao, 4,237,420, Cl. 328-3.000.

Selcuk, M. Kudret: *See*—
United States of America, National Aeronautics and Space Administration; and Selcuk, M. Kudret, 4,236,383, Cl. 60-641.000.

Selega, Zbigniew J.; Khalil, Ezzat N.; and McKavanagh, Gloria M., to Johnson Products Co., Inc. Medicated hair and scalp conditioner. 4,237,112, Cl. 424-70.000.

Semanisin, Dale J.: *See*—
Slama, William R.; Washburn, Robert B.; and Semanisin, Dale J., 4,237,177, Cl. 428-215.000.

Semin, Sergei S.: *See*—
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.

Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased (by Vesely, Jiri, heir), to SPOFA, United Pharmaceutical Works. Derivatives of carboxyalkyl imino- and thioxo-barbituric acids. 4,237,270, Cl. 536-18.000.

Senor, Ronald E.: *See*—
Thompson, Herbert A., Jr.; Senor, Ronald E.; and Beggs, Louis C., 4,237,510, Cl. 361-24.000.

Sepall, Ola: *See*—
Bialski, Alexander; Gentile, Camillo; and Sepall, Ola, 4,236,676, Cl. 241-74.000.

Sernagiotto, Emilio: *See*—
Sernagiotto, Raffaello; and Sernagiotto, Emilio, 4,236,445, Cl. 100-118.000.

Sernagiotto, Raffaello; and Sernagiotto, Emilio. Continuous belt filter press. 4,236,445, Cl. 100-118.000.

Serrander, Hans R., to Telefonaktiebolaget L M Ericsson. Cable with wire for slitting a protective sheath and process of manufacturing same. 4,237,337, Cl. 174-70.00R.

Service d'Exploitation Industrielle des Tabacs et des Allumette: *See*—
Wzegaert, Pierre, 4,236,536, Cl. 131-33.000.

Setescak, Edward J., to Heinemann Electric Company. Circuit breaker having a modified armature for time delays at high transient currents. 4,237,436, Cl. 335-63.000.

Shader, Benjamin A.; and Mayeda, Bruce H., to Eversman Mfg. Company, The. Land leveling apparatus with section blade assembly. 4,236,586, Cl. 172-779.000.

Shader, Benjamin A.; and Mayeda, Bruce H., to Eversman Mfg. Company, The. Ground-working apparatus and hitch assembly therefor. 4,236,587, Cl. 172-779.000.

Sharma, Satish C.: *See*—
Kalafus, Edward F.; and Sharma, Satish C., 4,236,564, Cl. 152-359.000.

Sharp Kabushiki Kaisha: *See*—
Kanatani, Yoshiharu, 4,237,456, Cl. 340-719.000.

Shaver, J. Lyle, to Allis-Chalmers Corporation. Mower with two sickle bars. 4,236,370, Cl. 56-297.000.

Shayes, Raymond G. G.: *See*—
Gustin, Pol A. G. J.; and Shayes, Raymond G. G., 4,237,469, Cl. 346-155.000.

Sheffer Collet Company: *See*—
Felker, Merle, 4,236,722, Cl. 279-118.000.

Shell Oil Company: *See*—
Mulder, Albertus J.; and de Jong, Aaldert J., 4,237,322, Cl. 568-820.000.
Powell, James E., 4,237,164, Cl. 424-304.000.
Roman, Steven A., 4,237,123, Cl. 424-200.000.
Roman, Steven A., 4,237,163, Cl. 424-304.000.

Shenderovich, Pavel B.: *See*—
Meierovich, Eduard A.; Shenderovich, Pavel B.; Chalisov, Jury I.; Golenchenko, Valery A.; Rybin, Igor V.; and Sukhushin, Vitaly B., 4,237,507, Cl. 361-19.000.

Sheng, Ming N.; and Kao, Jar-Lin, to Atlantic Richfield Company. Phenyl acetic acid preparation. 4,237,314, Cl. 562-496.000.

Sheng, Ping: *See*—
Roach, William R.; and Sheng, Ping, 4,236,823, Cl. 356-351.000.

Sherman, Robert; Rothman, Edward A.; and Mandelbaum, William, to United Technologies Corporation. Wind turbine blade retention device. 4,236,873, Cl. 416-204.00R.

Sherwood Refractories, Inc.: *See*—
Larson, David L., 4,236,568, Cl. 164-41.000.

Shiba, Keisuke: *See*—
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; Furutachi, Nobuo; and Nakamura, Kotaro, 4,237,217, Cl. 430-387.000.

Shibano, Yoshizo; Hatano, Tetsuo; and Ohkura, Toshihiko, to Sumitomo Electric Industries, Ltd. Map plate for the adjustment of angle elevation of an antenna. 4,237,465, Cl. 343-894.000.

Shigematu, Takashi: *See*—
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.

Shigeta, Yoshihiro: *See*—
Uchidoi, Masanori; Kawamura, Masaharu; Shigeta, Yoshihiro; Sugiura, Yoji; Yamamoto, Hiroshi; and Tezuka, Nobuo, 4,236,802, Cl. 354-268.000.

Shimada, Fumio: *See*—
Inoue, Eiichi; Takeda, Misturu; and Shimada, Fumio, 4,237,212, Cl. 430-346.000.

Shimomura, Jun, to Nippon Kogaku K.K. Lens for a camera provided with code patterns. 4,236,803, Cl. 354-286.000.

Shimomura, Jun: *See*—
Toyoda, Kenji; and Shimomura, Jun, 4,236,804, Cl. 354-286.000.

Shimp, Richard L., to ComSonics, Inc. Compatible transmission of an encoded signal with a television. 4,237,486, Cl. 358-142.000.

Shinn, Robert W.: *See*—
Lyons, James E.; Suld, George; and Shinn, Robert W., 4,237,309, Cl. 560-131.000.
Suld, George; Lyons, James E.; and Shinn, Robert W., 4,237,310, Cl. 560-131.000.

Shinoda, Kenichi: *See*—
Tsuchida, Takashi; Shinoda, Kenichi; Yamamoto, Kohei; and Suzuki, Toshio, 4,237,203, Cl. 429-122.000.

Shintani, Akira: *See*—
Kanagawa, Shuichi; Kawakami, Kazunori; and Shintani, Akira, 4,237,035, Cl. 260-28.00R.

Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, to Nippon Kayaku Kabushiki Kaisha. Derivatives of α-methyl-β-aminopropiophenone and use thereof. 4,237,141, Cl. 424-267.000.

Shiroki Kinzoku: *See*—
Ooshiro, Hideyuki; and Chiba, Masakazu, 4,236,753, Cl. 297-364.000.

Shishido, Isuneo; Cramm, Herman W.; and Vick, William L., to Hughes Aircraft Company. Five port waveguide switch. 4,237,431, Cl. 333-106.000.

Shiverdecker, James H.: *See*—
Nerenberg, Robert W.; and Shiverdecker, James H., 4,236,368, Cl. 53-491.000.

Shkhian, Tsolak G.: *See*—
Batjukov, Vladimir I.; Vjugov, Oleg N.; Fadeev, Alexandr I.; and Shkhian, Tsolak G., 4,236,967, Cl. 176-30.000.
Ljubivy, Alexandr G.; Batjukov, Vladimir I.; Shkhian, Tsolak G.; and Fadeev, Alexandr I., 4,236,969, Cl. 176-61.000.

Short, Edward H., III: *See*—
Wood, Loren E.; Forsythe, Calvin C.; Strelow, John L.; Short, Edward H., III; Allen, Jerome D.; and Clift, Miner E., 4,236,648, Cl. 220-89.00A.

Showa Electric Wire & Cable Co., Ltd.: *See*—
Kojima, Takeshi; Kinoshita, Sakae; and Takeuchi, Kenzo, 4,237,334, Cl. 174-25.00R.

Siemens Aktiengesellschaft: *See*—
Denk, Hans; and Habrich, Reiner, 4,237,149, Cl. 427-58.000.
Giebel, Wolfgang; Krause, Herbert; and Meltsch, Hans-Juergen, 4,237,335, Cl. 174-92.000.
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.
Krueger, Hans; and Glaubitz, Werner, 4,236,791, Cl. 350-345.000.
Landgraf, Hermann, 4,237,393, Cl. 310-59.000.
Lanig, Peter, 4,236,297, Cl. 29-599.000.
Mueller, Wolfgang, 4,236,839, Cl. 400-216.100.

Sienkiewicz, Gerald C.; McQuade, Donal J.; and Leonard, Herbert G., to International Business Machines Corporation. Endless ribbon cartridge. 4,236,678, Cl. 242-55.19A.

Sigel, Pierre: *See*—
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,301, Cl. 29-740.000.
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,306, Cl. 29-827.000.

Sigott, Siegfried; Kogler, Peter; Schetina, Otto; and Zitz, Alfred, to Vereinigte Osterreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft. Cutting machine. 4,236,627, Cl. 198-514.000.

Simeone, Arthur. Fire board. 4,236,499, Cl. 126-140.000.

Simmons, William A.: *See*—
Halwes, Dennis R.; and Simmons, William A., 4,236,607, Cl. 188-1.00B.

Simons, Henri J. L.: *See*—
van Eijck, Gustavus L. P.; and Simons, Henri J. L., 4,237,498, Cl. 360-72.200.

Singer Company, The: *See*—
Hall, John D.; and Williams, Alfred S., Jr., 4,236,325, Cl. 35-12.00S.

Singer, Michael; and Tury, Bernard, to Imperial Chemical Industries Limited. 1-Thiocyanato-8-substituted naphthalene compounds and their use as biocides. 4,237,019, Cl. 252-47.500.

Sisk, Francis J., to Westinghouse Electric Corp. Dual capacity compressor with reversible motor and controls arrangement therefor. 4,236,874, Cl. 417-315.000.

Skaggs, Robert L.: *See*—
Williams, Orlan G.; and Skaggs, Robert L., 4,236,399, Cl. 72-295.000.

Skarvinko, Eugene R., to International Business Machines Corporation. Photosensitive patternable coating composition containing novolak type materials. 4,237,216, Cl. 430-280.000.

SKF Kugellagerfabriken GmbH: *See*—
Feldle, Kurt, 4,236,767, Cl. 308-187.100.
Meining, Hans; Pfaller, Egon; Winkler, Otmar; and Kittel, Hilmar, 4,236,766, Cl. 308-15.000.

Skuttle Mfg. Co.: *See*—
Elliott, Richard D., 4,237,080, Cl. 261-80.000.

Slama, William R.; Washburn, Robert B.; and Semanisin, Dale J., to General Signal Corporation. Corrosion-resistant coated articles. 4,237,177, Cl. 428-215.000.

Slater, Ted L.: *See—*
Giacomotti, Richard A.; Giacomotti, Sally A.; Petrini, Julian L.; Petrini, Madeline A.; and Slater, Ted L., 4,237,376, Cl. 235-487.000.

Sleigh, Thomas: *See—*
Carlyle, Ian C.; Sleigh, Thomas; and Savage, David S., 4,237,126, Cl. 424-241.000.

Slidex Corporation: *See—*
Namiki, Naokuni, 4,236,635, Cl. 206-456.000.

Sluetz, James E.; and Calfee, Richard V., to Intermedics, Inc. Multiple function lead assembly. 4,236,525, Cl. 128-419.00P.

Smilges, Robert; and Wigmore, Richard, to Abex Corporation. Electro-hydraulic flow control apparatus. 4,236,690, Cl. 251-30.000.

Smith, Bernard, to United States of America, Army. Method of making a ruggedized high current density cathode. 4,236,287, Cl. 29-25.180.

Smith, Edmund H., Jr.: *See—*
Piovoso, Michael J.; Smith, Edmund H., Jr.; and Wolf, William E., 4,237,539, Cl. 364-552.000.

Smith, Elmer L. Planter with tubular air hole member. 4,236,351, Cl. 47-79.000.

Smith, Emil R.: *See—*
Boyes, Robert N.; Duce, Benjamin R.; Smith, Emil R.; and Byrnes, Eugene W., 4,237,068, Cl. 260-562.00N.

Smith, John A.: *See—*
Dick, George H.; and Smith, John A., 4,236,842, Cl. 400-144.200.

Smith, Joseph L., Jr.: *See—*
Ying, Sui-chun; Smith, Joseph L., Jr.; and Baumann, Kai J., 4,237,392, Cl. 310-52.000.

Smith, Lawther O.; Howard, Timothy L.; and Broitman, Kalman, to Gas Spring Corporation. Socket assembly for a ball and socket coupling. 4,236,845, Cl. 403-144.000.

Smith, Robin C. Wood splitter attachment. 4,236,556, Cl. 144-193.00A.

Smith, Ronald D. Temperature compensated positioning device. 4,236,790, Cl. 350-253.000.

Smith, Stanley; and Harries, John R., to Metal Box Limited. Article handling apparatus. 4,236,625, Cl. 198-454.000.

Smith, Stephen L., to Motorola, Inc. Program decoder for shared contact eprom. 4,237,547, Cl. 365-189.000.

Smoak, Richard H., to Carborundum Company, The. Method of producing a high density silicon carbide product. 4,237,085, Cl. 264-65.000.

SNIA VISCOSA Societa' Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Leoni, Roberto; Baldini, Alberto; and Angelini, Gianfranco, 4,237,274, Cl. 536-56.000.

Societe Anonyme DBA: *See—*
Claverie, Jean-Claude, 4,236,611, Cl. 188-79.50P.

Societe Anonyme Francaise du Ferodo: *See—*
Beccaris, Carlo, 4,236,620, Cl. 192-48.800.
Billet, Rene, 4,236,610, Cl. 188-76.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Rushmore, Dean F., 4,237,288, Cl. 544-275.000.

Societe Europeenne des Produits Refractaires: *See—*
Kiehl, Jean-Pierre; Remi, Jean-Pierre; and Schoennahl, Jacques R. P., 4,236,931, Cl. 106-64.000.

Societe Metallurgique le Nichel-S.L.N.: *See—*
Demarthe, Jean-Michel; Gandon, Louis; and Goujet, Monique, 4,236,981, Cl. 204-113.000.

Societe Orleanaise de Literie et de Mecanique: *See—*
Moritz, Victor, 4,236,750, Cl. 297-183.000.

Soderstrom, Melvin A.: *See—*
Hughes, Richard L.; Soderstrom, Melvin A.; Vachhani, Vasantrai A.; and Weisenburger, Lawrence P., 4,236,778, Cl. 339-97.00P.

Soejima, Shigeo: *See—*
Noguchi, Masaaki; Bunda, Tsuchio; Yamamoto, Noboru; and Soejima, Shigeo, 4,237,030, Cl. 252-432.000.

Soeno, Ko: *See—*
Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, 4,236,925, Cl. 75-229.000.

Solarex Corporation: *See—*
Wihl, Manfred G., 4,236,937, Cl. 136-89.0PC.

Solf, Alexander; and Mrozek, Christian, to Solf, Alexander. Articulate mast footing arrangement, in particular for wind surfboards. 4,236,476, Cl. 114-91.000.

Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, to Sankyo Company, Limited; and Ciba-Geigy Corporation. 2,2,6,6-Tetramethylpiperidine derivatives. 4,237,294, Cl. 546-20.000.

Sommervold, David E., to Hycel, Inc. Readout circuit in an automatic chemical testing apparatus. 4,236,894, Cl. 23-230.00R.

Sony Corporation: *See—*
Sakamoto, Hitoshi, 4,237,399, Cl. 310-317.000.
Tachi, Katsuichi, 4,237,499, Cl. 360-73.000.

Sorenson, Gordon U. Plant growing and display assembly. 4,236,353, Cl. 47-81.000.

Sorenson, John F.; and Locke, Frank W., to Champion International Corporation. File box. 4,236,740, Cl. 229-36.000.

Sorg, John H., Jr.: *See—*
Mills, Phillip R.; Luiz, Fernando A.; and Sorg, John H., Jr., 4,237,533, Cl. 364-200.000.

Sovish, Richard C.: *See—*
Lagardere, Bruno J. F.; and Sovish, Richard C., 4,237,174, Cl. 428-99.000.

Spa-Societa Prodotti Antibiotici S.p.A.: *See—*
Bruzzese, Tiberio; and Ferrari, Lorenzo, 4,237,117, Cl. 424-122.000.

Specktor, Gerald A. Vehicle anchoring apparatus. 4,236,400, Cl. 72-461.000.

Spector, George: *See—*
Heaney, William B.; and Spector, George, 4,236,352, Cl. 47-80.000.

Spectrex Corporation: *See—*
Hollenbeck, Keith E., 4,237,451, Cl. 340-606.000.

Spence, Bertle: *See—*
Norris, Thomas E.; and Spence, Bertle, 4,236,477, Cl. 114-222.000.

Speranza, George P.; and Zimmerman, Robert L., to Texaco Development Corporation. Urea derivative and use as polyurethane catalyst. 4,237,282, Cl. 544-168.000.

Sperry Corporation: *See—*
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,237,532, Cl. 364-200.000.
Decoene, Frans J. G. C., 4,236,369, Cl. 56-60.000.
Munro, James A.; and Lummis, Alan P., 4,236,372, Cl. 56-364.000.
Paul, Samuel J., 4,236,810, Cl. 355-10.000.
Roth, Irving; and Davidson, Ralph, 4,237,492, Cl. 358-225.000.
Tanski, William J., 4,237,433, Cl. 333-195.000.

Sperry Rand Corporation: *See—*
Wiedenman, Gregory B., 4,237,535, Cl. 364-200.000.

Spiegel, David A. Automatic bias adjusting circuit. 4,237,425, Cl. 330-263.000.

Spiller, Rex S., to Spiller Spring Company. Support grid and spring unit for a box spring foundation unit. 4,236,262, Cl. 5-267.000.

Spiller Spring Company: *See—*
Spiller, Rex S., 4,236,262, Cl. 5-267.000.

Spitzner, Ernest B., to Henkel Corporation. Sulfonylthiosemicarbazides, metal complexes thereof, and solutions containing such compounds for use in extraction of metal values. 4,237,062, Cl. 260-438.100.

Spodig, Heinrich. Magnetic conveyor belt. 4,236,632, Cl. 198-690.000.

SPOFA, United Pharmaceutical Works: *See—*
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.

Sportsonic, Inc.: *See—*
Zevgolis, Victoria H.; and Kitchen, Harry E., 4,237,372, Cl. 235-92.0GA.

Sprenkle, George J., to Burroughs Corporation. Wire unwrap assembly for use on automatic wiring machines. 4,236,303, Cl. 29-762.000.

Springer, Hartmut, to Hoechst Aktiengesellschaft. Process for the preparation of water-soluble phthalocyanine dyestuffs. 4,237,050, Cl. 260-242.200.

Srivastava, Gopal K.: *See—*
Engel, Christopher M.; Srivastava, Gopal K.; and Tzakis, George J., 4,237,478, Cl. 358-23.000.

Stabilus GmbH: *See—*
Nemenz, Andreas U., 4,237,353, Cl. 200-52.00R.

Stach, Leonard J., to Velsicol Chemical Corporation. Cyclic acetal-methyl-carbamoyl-methyl esters of phosphonic and phosphoric acid. 4,237,056, Cl. 260-340.700.

Stahl, Quade R., to Meloy Laboratories, Inc. Analytical apparatus and method employing purified ozone. 4,236,895, Cl. 23-232.00R.

Stahura, Richard, to Martin Engineering. Conveyor skirt board and holder. 4,236,628, Cl. 198-525.000.

Stamires, Dennis: *See—*
Alifandi, Hamid; and Stamires, Dennis, 4,237,031, Cl. 252-438.000.

Stanec, Anna; and Stanec, George. Apparatus and method for the quantitative measurement of the isometric contraction of the adductor pollicis muscle. 4,236,528, Cl. 128-741.000.

Stanec, George: *See—*
Stanec, Anna; and Stanec, George, 4,236,528, Cl. 128-741.000.

Stanier, Colin: *See—*
Krause, Janusz J. H.; and Stanier, Colin, 4,236,952, Cl. 156-93.000.

Stapp, Paul R., to Phillips Petroleum Company. Olefin oxidation process. 4,237,071, Cl. 260-597.00B.

Stapp, Paul R., to Phillips Petroleum Company. Oxidation process including recovery and recycle of catalyst. 4,237,312, Cl. 560-246.000.

Stapp, Paul R., to Phillips Petroleum Company. Olefin oxidation process. 4,237,331, Cl. 585-845.000.

Staudinger, Annemarie: *See—*
Robbins, Murray; and Staudinger, Annemarie, 4,236,924, Cl. 75-211.000.

Stauter, John C.: *See—*
Urban, Peter; Stauter, John C.; and Tolley, William K., 4,237,104, Cl. 423-242.000.

Stearn, Richard A.; Lamer, Gerald P.; and Lenius, Norbert W., to Marine Travelift, Inc. Mobile hoist. 4,236,859, Cl. 414-460.000.

Steensma, Peter D., to International Telephone and Telegraph Corporation. Multiuser protected optical data bus distribution systems. 4,237,550, Cl. 370-4.000.

Stein, Marc T., to Motorola, Inc. High impedance output current source. 4,237,414, Cl. 323-4.000.

Steiniger, Wolfgang: *See—*
Heitmann, Uwe; Steiniger, Wolfgang; Holznagel, Uwe; Kaebernick, Hartmut; Pfannmuller, Joachim; and Reuland, Joachim, 4,236,534, Cl. 131-21.00B.

Steklenski, David J.: *See—*
Upson, Donald A.; and Steklenski, David J., 4,237,194, Cl. 428-922.000.

Stellram S.A.: *See—*
Gonseth, Denis R.; and Hauser, Charles, 4,237,184, Cl. 428-336.000.

Stendel, Wilhelm: *See*—
Kabbe, Hans-Joachim; Widdig, Arno; Stendel, Wilhelm; and Roessler, Peter, 4,237,162, Cl. 424-283.000.

Stenson, Thomas K. Portable stitching device. 4,236,470, Cl. 112-169.000.

Stenz, Paul; and Kordt, Hans-Herbert, to C. A. Weidmuller KG. Multiway terminal block. 4,236,780, Cl. 339-198.00G.

Stephan, Herbert: *See*—
Aichert, Hans; Hoffman, Otto-Horst; and Stephan, Herbert, 4,237,148, Cl. 427-42.000.

Stephenson, Alan G.: *See*—
Foster, Norman; and Stephenson, Alan G., 4,236,538, Cl. 131-149.000.

Steppich, Walter; and Sartorius, Rudolf, to Hoechst Aktiengesellschaft. Process for the manufacture of acetaldehyde. 4,237,073, Cl. 260-604.0AC.

Sterling Drug Inc.: *See*—
Cuthbertson, Eric, 4,237,321, Cl. 568-776.000.

Stevens, Alan E.: *See*—
Bunting, John G.; Cross, Robin C.; Guard, David R.; Groves, Ian S.; Johnson, Edward G. T.; and Stevens, Alan E., 4,237,339, Cl. 179-1.0CN.

Stevens, G. Randall: *See*—
Erickson, Robert W., Jr.; and Stevens, G. Randall, 4,237,502, Cl. 360-78.000.

Stevenson, Cleatus G. Controlled pressure draw clamp. 4,236,703, Cl. 269-41.000.

Stevenson, James G. Coin operated tire inflating apparatus. 4,236,622, Cl. 194-87.000.

Stewart, Thomas I.: *See*—
Evans, William D. J.; Larbey, Robert J.; and Stewart, Thomas I., 4,237,032, Cl. 252-462.000.

Stiefel, Peter: *See*—
Greiner, Max; Peters, Klaus J.; Schelthas, Peter; Stiefel, Peter; and Nusser, Hermann, 4,237,079, Cl. 261-44.00A.

Stiftelsen Kalmarsundsgruppen: *See*—
Carlsson, John, 4,236,609, Cl. 188-67.000.

Stine, Jon D.: *See*—
Crowley, Daniel J.; and Stine, Jon D., 4,236,667, Cl. 235-443.000.

Stobi, Johann, to Maschinenfabrik Benninger AG. Steamer for a continuously throughpassing textile web. 4,236,391, Cl. 68-5.00D.

Stoller, David A.: *See*—
Niggemeier, Joseph F.; Stoller, David A.; and Xander, William J., 4,236,853, Cl. 410-77.000.

Stone, W. James; and Thomas, Lovic P., to United States of America, Navy. Ejection seat with pitch, roll and yaw control. 4,236,687, Cl. 244-122.0AD.

Storandt, Ralf, to Vereinigte Baubeschelagfrabriken Gretsch & Co. GmbH. Safety toe units for ski bindings. 4,236,727, Cl. 280-629.000.

Strasen, Gunter: *See*—
Kothe, Hans K.; and Strasen, Gunter, 4,237,411, Cl. 320-21.000.

Stregack, Joseph A.: *See*—
Wexler, Bernard L.; Stregack, Joseph A.; and Manuccia, Thomas J., Jr., 4,237,428, Cl. 331-94.50G.

Strelow, John L.: *See*—
Wood, Loren E.; Forsythe, Calvin C.; Strelow, John L.; Short, Edward H., III; Allen, Jerome D.; and Clift, Miner E., 4,236,648, Cl. 220-89.00A.

Stretanski, Joseph A., to American Cyanamid Company. Polyolefins stabilized against light-induced degradation. 4,237,042, Cl. 260-45.80R.

Strien, Werner, to Recaro GmbH & Co. Vehicle safety seat bottom. 4,236,751, Cl. 297-216.000.

Strom, Robert, to Textron Inc. Notions display heading for perforated board. 4,236,336, Cl. 40-622.000.

Strongin, Myron; Ghosh, Arup K.; Wiesmann, Harold J.; Rock, Edward B.; and Lutz, Harry A., III, to United States of America, Energy. Thermal decomposition of silane to form hydrogenated amorphous Si film. 4,237,151, Cl. 427-74.000.

Strudgeon, George E.; and Hiltgen, Aloysius X., to Zurn Industries, Inc. Multi sorption process and system. 4,237,002, Cl. 210-18.000.

Stucki, Samuel: *See*—
Muller, Rene; and Stucki, Samuel, 4,236,993, Cl. 204-294.000.

Styles, Virgil L.: *See*—
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,237,289, Cl. 544-279.000.

Suda, Minoru: *See*—
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, 4,237,058, Cl. 260-343.30R.

Sueyoshi, Susumu, to Pioneer Electronic Corporation. Transistor amplifier. 4,237,426, Cl. 330-296.000.

Sugahara, Mikio: *See*—
Matoba, Yasuo; Hashimoto, Akira; and Sugahara, Mikio, 4,237,247, Cl. 525-335.000.

Sugalski, Raymond K., to General Electric Company. Multiple-battery battery charger. 4,237,409, Cl. 320-2.000.

Suganuma, Hisashi: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.

Sugita, Keiji: *See*—
Hirose, Akira; Sugita, Keiji; and Takagi, Yasuzi, 4,236,811, Cl. 355-14.00R.

Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki, to Sugiura, Mamoru; and Itoh, Hitoshi. Glucan having antitumor activity. 4,237,266, Cl. 536-1.000.

Sugiura, Yoji: *See*—
Uchidoi, Masanori; Kawamura, Masaharu; Shigeta, Yoshihiro; Sugiura, Yoji; Yamamoto, Hiroshi; and Tezuka, Nobuo, 4,236,802, Cl. 354-268.000.

Sukhushin, Vitaly B.: *See*—
Meierovich, Eduard A.; Shenderovich, Pavel B.; Chalisov, Jury I.; Golenchenko, Valery A.; Rybin, Igor V.; and Sukhushin, Vitaly B., 4,237,507, Cl. 361-19.000.

Suld, George; Lyons, James E.; and Shinn, Robert W., to Suntech, Inc. Co-oxidation of methyl benzenes and benzaldehyde to phenolics and formaldehyde. 4,237,310, Cl. 560-131.000.

Suld, George: *See*—
Lyons, James E.; Suld, George; and Shinn, Robert W., 4,237,309, Cl. 560-131.000.

Sultanov, Nuri T. O.: *See*—
Aliev, Sakhib M. O.; Aliev, Vagab S.; Guseinov, Novruz I. O.; Nagiev, Vagif A. O.; and Sultanov, Nuri T. O., 4,237,323, Cl. 568-738.000.

Sumitomo Chemical Company, Limited: *See*—
Asao, Shuichiro; Yamamoto, Shigeo; Hisada, Yoshio; Nakayama, Yoshinori; and Takayama, Chiyozo, 4,237,122, Cl. 424-200.000.
Higo, Akio; and Suzuki, Yukio, 4,237,313, Cl. 562-401.000.
Kanagawa, Shuichi; Kawakami, Kazunori; and Shintani, Akira, 4,237,035, Cl. 260-28.00R.

Sumitomo Electric Industries, Ltd.: *See*—
Shibano, Yoshizo; Hatano, Tetsuo; and Ohkura, Toshihiko, 4,237,465, Cl. 343-894.000.

Summerlin, Frederick A.: *See*—
McGauran, Hugh K.; and Summerlin, Frederick A., 4,236,438, Cl. 85-1.0JP.

Summers, Geraldine Y. Portable disposable basin apparatus. 4,236,771, Cl. 312-228.000.

Sunakoda, Katsuaki; and Ito, Yoshikazu. Friction braking type vibration damper. 4,236,606, Cl. 188-1.00B.

Sunbeam Plastics Corporation: *See*—
Gach, Peter P., 4,236,653, Cl. 222-153.000.

Sundell, George J.: *See*—
Lovrich, Vincent; and Sundell, George J., 4,236,446, Cl. 101-79.000.

Sunds AB: *See*—
Kubat, Josef; and Djurner, Jan K., 4,237,089, Cl. 264-328.000.

Suntech, Inc.: *See*—
Lyons, James E.; Suld, George; and Shinn, Robert W., 4,237,309, Cl. 560-131.000.
Suld, George; Lyons, James E.; and Shinn, Robert W., 4,237,310, Cl. 560-131.000.

Suovaniemi, Osmo A.; Ekholm, Pertti; and Kaukanen, Esko, to Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi. Apparatus for precise mutual dilution and dosage of liquids. 4,237,094, Cl. 422-100.000.

Suovaniemi, Osmo A.; Tervamaki, Jukka; and Kukka, Aarre, to Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi. Tip vessel for use in connection with a dosage pipette. 4,237,095, Cl. 422-100.000.

Superior Oil Company, The: *See*—
Knight, John H., 4,236,640, Cl. 209-587.000.

Surko, Walter E., Jr.; and Hart, LeRoy, to Emhart Industries, Inc. Retrofit lock. 4,236,396, Cl. 70-107.000.

Suwa, Masateru: *See*—
Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, 4,236,925, Cl. 75-229.000.

Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seatbelt system. 4,236,729, Cl. 280-804.000.

Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seatbelt system. 4,236,730, Cl. 280-804.000.

Suzuki, Kazuo. Vessel adaptable to the expansion and/or contraction of fluid therein. 4,236,316, Cl. 33-364.000.

Suzuki, Kinzaburo: *See*—
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Hiromitsu; Suzuki, Kinzaburo; Okubo, Azuma; Nakanoya, Takishi; Miura, Katsunori; and Sagi, Tadao, 4,237,233, Cl. 435-254.000.

Suzuki, Kouji: *See*—
Komatsu, Shigeru; Takahashi, Satoshi; Suzuki, Kouji; and Wakatsuki, Masao, 4,236,832, Cl. 357-51.000.

Suzuki, Nobuyoshi; and Yoshinari, Shigeru, to Olympus Optical Co., Ltd. Apparatus for measuring ion activities. 4,236,988, Cl. 204-195.00R.

Suzuki, Toshio: *See*—
Tsuchida, Takashi; Shinoda, Kenichi; Yamamoto, Kohei; and Suzuki, Toshio, 4,237,203, Cl. 429-122.000.

Suzuki, Yukio: *See*—
Higo, Akio; and Suzuki, Yukio, 4,237,313, Cl. 562-401.000.

SW (Delaware), Inc.: *See*—
Gallant, James O., 4,236,285, Cl. 26-103.000.

Swann, Wayne E.: *See*—
Hartdegen, Frank J.; and Swann, Wayne E., 4,237,229, Cl. 435-182.000.

Swihart, Wayne A.: *See*—
Abler, Norman C.; Zimmerman, Earlyn E.; and Swihart, Wayne A., 4,236,286, Cl. 28-160.000.

Sykes, Richard B.: *See*—
Cimarusti, Christopher M.; Koster, William H.; and Sykes, Richard B., 4,237,128, Cl. 424-246.000.

Sylvester, Robert A., to Eastman Kodak Company. Film pack. 4,236,798, Cl. 354-181.000.

Symon, Charles R.: *See*—
Thompson, Arthur H.; Symon, Charles R.; and Jacobson, Allan J., 4,237,204, Cl. 429-194.000.

Szasz, Peter R., to Kasper Instruments, Inc. Disc handling system and method. 4,236,851, Cl. 406-72.000.

T-Bar Incorporated: *See*—
Seiden, Lewis J., 4,237,352, Cl. 200-51.030.

Tabak, Samuel A.; and Morrison, Roger A., to Mobil Oil Corporation. Xylene isomerization. 4,236,996, Cl. 208-134.000.

Tachi, Katsuichi, to Sony Corporation. Video tape control time code reading. 4,237,499, Cl. 360-73.000.

Tacke, Reinhold; Bentlage, Anke; Towart, Robertson; and Vater, Wulf, to Bayer Aktiengesellschaft. Sila-substituted 1,4-dihydropyridine derivatives and their medicinal use. 4,237,137, Cl. 424-251.000.

Tadros, Maher E., to Martin Marietta Corporation. Product comprising lime or limestone and Graham's salt or $M_xP_nO_{(3N+1)}$. 4,237,025, Cl. 252-192.000.

Takada, Shunji: *See*—
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Tsujino, Nobuyuki, 4,237,214, Cl. 430-441.000.

Takagi, Shoji; and Ito, Nobuo, to Tokyo Shibaura Electric Co., Ltd. Pliable and restorable hairsetter. 4,236,540, Cl. 132-40.000.

Takagi, Yasuzi: *See*—
Hirose, Akira; Sugita, Keiji; and Takagi, Yasuzi, 4,236,811, Cl. 355-14.00R.

Takahashi, Akio; Tsumuki, Chiaki; and Nakamura, Hitoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of metallurgically joining a fitting to a shaft. 4,236,923, Cl. 75-208.00R.

Takahashi, Hideyuki: *See*—
Fuga, Nobuhiko; Uchimura, Kunio; and Takahashi, Hideyuki, 4,237,326, Cl. 585-4.000.

Takahashi, Keiichi, to Tokan Kogyo Co., Ltd. Process for producing thermoplastic multi-walled pipes. 4,236,953, Cl. 156-244.130.

Takahashi, Nagashige; and Noda, Nobuhiro. Curving device in an endoscope. 4,236,509, Cl. 128-4.000.

Takahashi, Satomi: *See*—
Yamada, Hideaki; Takahashi, Satomi; and Yoneda, Koji, 4,237,227, Cl. 435-108.000.

Takahashi, Satoshi: *See*—
Komatsu, Shigeru; Takahashi, Satoshi; Suzuki, Kouji; and Wakatsuki, Masao, 4,236,832, Cl. 357-51.000.

Takahashi, Takao, to Mitsui Petrochemical Industries Ltd. Powder coating composition composed of ethylene resin mixture and hydrocarbon wax. 4,237,037, Cl. 260-28.5AV.

Takakura, Isamu: *See*—
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, 4,237,280, Cl. 544-27.000.

Takami, Satoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Exposure factor switching circuit. 4,236,801, Cl. 354-234.000.

Takano, Shuntaro: *See*—
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, 4,237,280, Cl. 544-27.000.

Takara Co., Ltd.: *See*—
Inoue, Tsutomu, 4,236,345, Cl. 46-44.000.

Takashima, Toshiyuki: *See*—
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, 4,237,058, Cl. 260-343.30R.

Takatsu, Suehiro. Energy storing device. 4,236,387, Cl. 64-11.00R.

Takayama, Chiyozo: *See*—
Asao, Shuichiro; Yamamoto, Shigeo; Hisada, Yoshio; Nakayama, Yoshinori; and Takayama, Chiyozo, 4,237,122, Cl. 424-200.000.

Takeda, Misturu: *See*—
Inoue, Eiichi; Takeda, Misturu; and Shimada, Fumio, 4,237,212, Cl. 430-346.000.

Takemura, Yasuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Blemish compensating system for a solid state image pick-up device. 4,237,488, Cl. 358-163.000.

Takeno, Hidekazu: *See*—
Kamiya, Takashi; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; and Takeno, Hidekazu, 4,237,305, Cl. 560-29.000.

Takenoya, Hideaki; and Makabe, Hachiro, to Janome Sewing Machine Co. Ltd. Sewing machine with feed dog dropping control system. 4,236,469, Cl. 112-158.00E.

Takeuchi, Kenzo: *See*—
Kojima, Takeshi; Kinoshita, Sakae; and Takeuchi, Kenzo, 4,237,334, Cl. 174-25.00R.

Taliaferro, James R., to Best Metal Products. See through fireplace. 4,236,498, Cl. 126-120.000.

Talley, Charles D. Ladder leveling device. 4,236,603, Cl. 182-204.000.

Tamer, Ergun: *See*—
Walz, Klaus; and Tamer, Ergun, 4,237,268, Cl. 536-4.000.

Tanabe, Nato; Okada, Kenzoh; and Maeda, Norio, to Kurashiki Boseki Kabushiki Kaisha. Method of manufacturing a flexible polyurethane foam product. 4,237,181, Cl. 428-307.000.

Tanaka, Hideo: *See*—
Torii, Sigeru; Tanaka, Hideo; and Kobayashi, Yuichi, 4,237,308, Cl. 560-122.000.

Tanaka, Kiyoshi: *See*—
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, 4,237,280, Cl. 544-27.000.

Tanaka, Yoshikazu; and Eguchi, Yasukata, to Janome Sewing Machine Co. Ltd. Sewing machine with display units which display guidance data guiding the user in manual adjustment of operating variables in automatic response to user selection of stitch type. 4,236,467, Cl. 112-158.00F.

Tang, Paul R., to Bunker Ramo Corporation. EMI Shielded cable and connector assembly. 4,236,779, Cl. 339-143.00R.

Tanski, William J., to Sperry Corporation. Surface acoustic wave resonators with integrated internal coupler reflectors. 4,237,433, Cl. 333-195.000.

Tapco International, Inc.: *See*—
Arnoldy, Roman F., 4,237,362, Cl. 219-76.140.

Tarullo, Daniel J., to Tarullo, Daniel J. Forced droplet humidifier. 4,236,505, Cl. 126-350.00B.

Taylor, Edward C.: *See*—
White, John F.; Taylor, Edward C.; and Chiang, Chih-Shu, 4,237,306, Cl. 560-105.000.

Taylor, Peter J.: *See*—
Turner, Horace G.; and Taylor, Peter J., 4,236,572, Cl. 165-38.000.

Taylor, Richard H.: *See*—
Hatter, Edward E.; Taylor, Richard H.; and McGunigle, Richard D., 4,236,510, Cl. 128-24.00A.

Technology Marketing, Inc.: *See*—
Wells, George H., 4,237,546, Cl. 364-900.000.

Teijin Limited: *See*—
Bannai, Kiyoshi; Ohnuma, Norio; Ishizuka, Seiichi; Kubo, Junji; and Naruchi, Tatuyuki, 4,237,125, Cl. 424-236.000.

Teledyne Industries, Inc.: *See*—
Karpal, David L., 4,237,202, Cl. 429-120.000.

Telefonaktiebolaget L M Ericsson: *See*—
Serrander, Hans R., 4,237,337, Cl. 174-70.00R.

Teletype Corporation: *See*—
Hodne, Ingard B., 4,236,836, Cl. 400-124.000.

Tennessee Valley Authority: *See*—
Hicks, Gordon C.; and Megar, George H., 4,237,106, Cl. 423-315.000.
McCullough, John F., 4,236,911, Cl. 71-34.000.

Teoli, Anthony, to Youngstown Steel Door Company, The. Depressed center car. 4,236,459, Cl. 105-406.00R.

Terauchi, Kiyoshi, to Sankyo Electric Company Limited. Lubrication system for compressor unit. 4,236,878, Cl. 417-269.000.

Terrot Strickmaschinen GmbH: *See*—
Blank, Jochen; and Bobe, Dieter, 4,236,390, Cl. 66-149.00R.

Terui, Yasuaki: *See*—
Chikamura, Takao; Fujiwara, Shinji; Terui, Yasuaki; and Fukai, Masakazu, 4,236,829, Cl. 357-16.000.

Tervamaki, Jukka: *See*—
Suovaniemi, Osmo A.; Tervamaki, Jukka; and Kukka, Aarre, 4,237,095, Cl. 422-100.000.

Texaco Development Corporation: *See*—
Speranza, George P.; and Zimmerman, Robert L., 4,237,282, Cl. 544-168.000.

Texaco Inc.: *See*—
Allen, Joseph C.; and Porter, John W., 4,237,017, Cl. 252-8.55D.
Kalfoglou, George, 4,236,579, Cl. 166-274.000.
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., 4,237,070, Cl. 260-580.000.
Schievelbein, Vernon H., 4,237,018, Cl. 252-8.55D.

Texas Instruments Incorporated: *See*—
Berg, Peter G., 4,237,077, Cl. 261-39.00E.
Berg, Peter G., 4,237,366, Cl. 219-219.000.
Boulanger, Henry J.; and Puccini, Richard E., 4,237,351, Cl. 200-5.00A.
Thompson, Herbert A., Jr.; Senor, Ronald E.; and Beggs, Louis C., 4,237,510, Cl. 361-24.000.

Textron, Inc.: *See*—
Halwes, Dennis R.; and Simmons, William A., 4,236,607, Cl. 188-1.00B.
Moertel, George B., 4,236,683, Cl. 24-205.13R.
Orr, David A.; Gala, Hiren S.; and Scagnelli, George J., 4,236,292, Cl. 29-408.000.
Rockenfeller, John D.; and Llewellyn, Thomas E., 4,237,354, Cl. 200-83.00C.
Strom, Robert, 4,236,336, Cl. 40-622.000.

Tezuka, Nobuo: *See*—
Uchidoi, Masanori; Kawamura, Masaharu; Shigeta, Yoshihiro; Sugiura, Yoji; Yamamoto, Hiroshi; and Tezuka, Nobuo, 4,236,802, Cl. 354-268.000.

Theiler, Robert. Ironing installation and method of operating the same. 4,236,330, Cl. 38-8.000.

Themy, Constantinos D. High voltage electrolytic cell. 4,236,992, Cl. 204-278.000.

Thermonetics Corporation: *See*—
Poppendiek, Heinz F., 4,236,403, Cl. 73-15.00A.

Theurer, Josef; and Brunninger, Manfred, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile apparatus for continuously renewing track. 4,236,452, Cl. 104-2.000.

Thew, Martin T.: *See*—
Colman, Derek A.; and Thew, Martin T., 4,237,006, Cl. 210-84.000.

Thieme, Peter C.; Frickel, Fritz-Frieder; Hagen, Helmut; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, to BASF Aktiengesell-

schaft. Amino derivatives of 2-methyl-5-(2-hydroxystyryl)-1,3,4-thiadiazole. 4,237,278, Cl. 542-429.000.

Thillays, Jacques C., to U.S. Philips Corporation. Photocoupler device. 4,237,382, Cl. 250-551.000.

Thim, Stig: *See*—
Limmergard, Sten; and Thim, Stig, 4,236,670, Cl. 238-8.000.

Tholen, Paul, to Klockner-Humboldt-Deutz Aktiengesellschaft. Internal combustion engine having a supercharger and means for cooling charged air. 4,236,492, Cl. 123-119.0CD.

Thoma, Paul E.: *See*—
Colla, Jeannine O.; and Thoma, Paul E., 4,236,307, Cl. 29-857.000.

Thomas, Dean L.; Frank, Robert G.; and Claassen, George R., to PPG Industries, Inc. Producing glass sheets having improved break patterns. 4,236,909, Cl. 65-115.000.

Thomas, Lovic P.: *See*—
Stone, W. James; and Thomas, Lovic P., 4,236,687, Cl. 244-122.0AD.

Thompson, Arthur H.; Symon, Charles R.; and Jacobson, Allan J., to Exxon Research & Engineering Co. Molybdenum sulfide cathode structure. 4,237,204, Cl. 429-194.000.

Thompson, David A., to International Business Machines Corporation. Chip package with high capacitance, stacked vlsi/power sheets extending through slots in substrate. 4,237,522, Cl. 361-392.000.

Thompson, Herbert A., Jr.; Senor, Ronald E.; and Beggs, Louis C., to Texas Instruments Incorporated. Electrical switching apparatus. 4,237,510, Cl. 361-24.000.

Thompson, John U., to Oce'-Industries, Inc. Take-up reel. 4,236,680, Cl. 242-74.100.

Thomson-CSF: *See*—
Castera, Jean-Paul; and Hepner, Georges, 4,236,782, Cl. 350-96.130.
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Papuchon, Michel; Puech, Brigitte; and Werner, Michel, 4,236,785, Cl. 350-96.140.

Thorberg, Seth-Olov: *See*—
Lindberg, Ulf M. A.; Ross, Svante B.; Thorberg, Seth-Olov; and O gren, Sven O., 4,237,311, Cl. 560-173.000.

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Erickson, Alve J.; and Thulman, Robert D., 4,236,454, Cl. 104-69.000.

Thyssen Industrie AG: *See*—
Koppers, Manfred; and Pawelski, Ludwig, 4,236,850, Cl. 405-291.000.
Roth, Gunther, 4,237,359, Cl. 219-10.410.

Times Fiber Communications, Inc.: *See*—
Dabby, Franklin W.; and Chesler, Ronald B., 4,236,905, Cl. 65-3.00A.

Timex Corporation: *See*—
Bissar, Saadi J., 4,236,792, Cl. 350-357.000.

Tjaden, Garold S.: *See*—
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,237,532, Cl. 364-200.000.

TKR Tabak Forschnugs-GmbH & Co.: *See*—
de Clara, Maximilian, 4,236,533, Cl. 131-17.00R.

Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Kamiyama, Setsuo; Nagashima, Yukio; Furukawa, Hiroshi; and Kaneko, Katsumi, 4,237,329, Cl. 585-474.000.

Tokan Kogyo Co., Ltd: *See*—
Takahashi, Keiichi, 4,236,953, Cl. 156-244.130.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Inukai, Sumitaka; and Azuma, Takashi, 4,236,485, Cl. 118-690.000.
Komatsu, Shigeru; Takahashi, Satoshi; Suzuki, Kouji; and Wakatsuki, Masao, 4,236,832, Cl. 357-51.000.
Nakamine, Chosin; and Fuzii, Norihito, 4,236,486, Cl. 118-691.000.
Takemura, Yasuo, 4,237,488, Cl. 358-163.000.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Arimura, Yoshiaki, 4,236,781, Cl. 350-81.000.
Takagi, Shoji; and Ito, Nobuo, 4,236,540, Cl. 132-40.000.

Tolley, William K.: *See*—
Urban, Peter; Stauter, John C.; and Tolley, William K., 4,237,104, Cl. 423-242.000.

Tomka, Jiri; and Ginn, Jack M., to Imperial Chemical Industries Limited. Polyamide compositions containing carboxylic acid metal salt and organophosphonic acid. 4,237,034, Cl. 260-18.00N.

Tomozawa, Atsushi: *See*—
Aikoh, Shinichi; Niwa, Kunihiko; and Tomozawa, Atsushi, 4,237,552, Cl. 370-83.000.

Tomy Kogyo Co., Inc.: *See*—
Iwao, Noriaki, 4,236,346, Cl. 46-104.000.
Kaga, Takashi, 4,236,718, Cl. 273-153.00R.

Tonkin, Kenneth J., to A. B. Dick Company. Transport system for advancing copy sheets through tandem duplicating system. 4,236,814, Cl. 355-26.000.

Toray Industries, Inc.: *See*—
Fukuhara, Mototada; and Morita, Ken-ichi, 4,237,108, Cl. 423-447.400.
Hiramatsu, Toru; and Morita, Ken-ichi, 4,237,109, Cl. 423-447.500.

Torii, Sigeru; Tanaka, Hideo; and Kobayashi, Yuichi, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Process for preparing 2-cyclopentenone derivative and perfume composition containing the derivative. 4,237,308, Cl. 560-122.000.

Torkko, Reino, to Canadian Patents & Development Ltd. Animal trap. 4,236,341, Cl. 43-88.000.

Tornblom, Bengt H.; and Tornblom, Torborg M., to Tornbloms Kvalitetskontroll AB. Method and apparatus for non-destructive testing using a plurality of frequencies. 4,237,419, Cl. 324-225.000.

Tornblom, Torborg M.: *See*—
Tornblom, Bengt H.; and Tornblom, Torborg M., 4,237,419, Cl. 324-225.000.

Tornbloms Kvalitetskontroll AB: *See*—
Tornblom, Bengt H.; and Tornblom, Torborg M., 4,237,419, Cl. 324-225.000.

Torre, Salvatore F., to American Cyanamid Company. Process for phthalocyanine green pigment. 4,236,933, Cl. 106-288.00Q.

Toshiba Kikai Kabushiki Kaisha: *See*—
Kawakami, Hideo; Endo, Masami; and Yamazaki, Fumio, 4,236,432, Cl. 83-848.000.

Towart, Robertson: *See*—
Tacke, Reinhold; Bentlage, Anke; Towart, Robertson; and Vater, Wulf, 4,237,137, Cl. 424-251.000.

Toyama Chemical Company, Limited: *See*—
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, 4,237,280, Cl. 544-27.000.

Toyo Jozo Kabushiki Kaisha: *See*—
Misaki, Hideo; Horiuchi, Yoshifumi; Matsuura, Kazuo; and Harada, Saburo, 4,237,222, Cl. 435-25.000.
Okuyama, Tsuneo; Fujii, Tadashiro; Nakagawa, Nobuaki; and Kotani, Kikuo, 4,237,267, Cl. 536-1.000.

Toyobo Co., Ltd.: *See*—
Yoshimura, Shohei; and Isaka, Tutomu, 4,237,088, Cl. 264-235.800.

Toyoda, Kenji; and Shimomura, Jun, to Nippon Kogaku K.K. Lens information introducing device having corrected extraneous light. 4,236,804, Cl. 354-286.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, 4,236,901, Cl. 55-276.000.
Noguchi, Masaaki; Bunda, Tsuchio; Yamamoto, Noboru; and Soejima, Shigeo, 4,237,030, Cl. 252-432.000.
Ooshiro, Hideyuki; and Chiba, Masakazu, 4,236,753, Cl. 297-364.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,236,729, Cl. 280-804.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,236,730, Cl. 280-804.000.
Takahashi, Akio; Tsumuki, Chiaki; and Nakamura, Hitoshi, 4,236,923, Cl. 75-208.00R.

Trepanier, Donald L.: *See*—
Britton, Thomas C.; and Trepanier, Donald L., 4,237,049, Cl. 260-239.0BD.

Tretevich, Roman I.: *See*—
Chigirinsky, Alexandr A.; Danko, Vladimir G.; Grinchenko, Nikolai G.; Cheremisov, Ivan Y.; Tretevich, Roman I.; and Penkina, Galina V., 4,237,398, Cl. 310-214.000.

Trevithick, Richard W. Programmable multi-channel audio playback system. 4,237,497, Cl. 360-72.100.

Tri-Tronics Company, Inc.: *See*—
Warner, Robert A., 4,236,604, Cl. 186-61.000.

Trichet, Luc: *See*—
Rouxel, Jean; and Trichet, Luc, 4,237,201, Cl. 429-104.000.

Trio Kabushiki Kaisha: *See*—
Naito, Michinori, 4,237,556, Cl. 455-154.000.

Trisa Burstenfabrik A.G.: *See*—
Meyer, Walter; and Bara, Anton J., 4,236,651, Cl. 222-82.000.

Troncoso, Fernando V., Jr. Archery bow with arrow rest. 4,236,497, Cl. 124-24.00R.

Trott, Delano B., to Beringer Co., Inc. Flowable material passage with interposable slide member. 4,237,014, Cl. 210-330.000.

Troutman, Richard C.: *See*—
La Russa, Joseph A.; Troutman, Richard C.; and Attler, Anthony R., 4,236,519, Cl. 128-305.000.

Troxell, Lillian H.: *See*—
Johnston, Howard; Troxell, Lillian H.; and Claus, Jon S., 4,236,912, Cl. 71-94.000.

TRW Inc.: *See*—
Allen, Reginald A., 4,237,389, Cl. 307-221.00D.
Dotter, Berton E., 4,237,345, Cl. 179-16.00E.
Hook, Dale L.; and Waypa, John, Jr., 4,237,429, Cl. 331-94.50G.
Huang, Marshall Y.; Grote, Albert J.; and Yen, Kuo-Hsiung, 4,237,432, Cl. 333-194.000.
Jones, Robert J., 4,237,262, Cl. 528-322.000.

Tsuchida, Takashi; Shinoda, Kenichi; Yamamoto, Kohei; and Suzuki, Toshio, to Fuji Electrochemical Co., Ltd. Rupturable safety sealing gasket of cell. 4,237,203, Cl. 429-122.000.

Tsuchihashi, Genichi; and Ogura, Katsuyuki, to Sagami Chemical Research Center. Aromatic acetic acid derivatives having sulfur atom at alpha-position and process for their preparation. 4,237,298, Cl. 546-238.000.

Tsuchiya, Masatoshi: *See*—
Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, 4,236,925, Cl. 75-229.000.

Tsuda, Yoshihisa: *See*—
Jackson, Denise M.; and Tsuda, Yoshihisa, 4,237,231, Cl. 435-234.000.

Tsujino, Nobuyuki: *See*—
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Tsujino, Nobuyuki, 4,237,214, Cl. 430-441.000.

Tsumuki, Chiaki: *See*—
Takahashi, Akio; Tsumuki, Chiaki; and Nakamura, Hitoshi, 4,236,923, Cl. 75-208.00R.
Turanin, Sergei G.: *See*—
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.
Turk, Leonard G.; and Enders, George E., to NRM Corporation. Tire press. 4,236,883, Cl. 425-32.000.
Turnbuckle Products Corporation: *See*—
Anderson, Robert V., 4,236,736, Cl. 285-150.000.
Turner, David: *See*—
Blenkinsop, Philip T.; McLean, Graham W.; and Turner, David, 4,237,396, Cl. 310-154.000.
Turner, Horace G.; and Taylor, Peter J., to Plessey Handel und Investments AG. Fluid cooled heat exchanger system. 4,236,572, Cl. 165-38.000.
Turner, John; Koster, Richard A.; and Bassman, Seymour, to Harsco Corporation. Field artillery ammunition support vehicle. 4,236,441, Cl. 89-40.00F.
Turpin, Daniel: *See*—
Schweizer, Alfred D.; Erskine, William G.; and Turpin, Daniel, 4,236,532, Cl. 131-9.000.
Tury, Bernard: *See*—
Singer, Michael; and Tury, Bernard, 4,237,019, Cl. 252-47.500.
Tusso, Robert J.; Feher, Peter; Schultes, Max; and Eberlein, Dietmar, to Savin Corporation. Copier scan and collator back bar control. 4,236,808, Cl. 355-8.000.
Tyler, Derek E.: *See*—
Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., 4,236,570, Cl. 164-49.000.
Tzakis, George J.: *See*—
Engel, Christopher M.; Srivastava, Gopal K.; and Tzakis, George J., 4,237,478, Cl. 358-23.000.
Uchidoi, Masanori; Kawamura, Masaharu; Shigeta, Yoshihiro; Sugiura, Yoji; Yamamoto, Hiroshi; and Tezuka, Nobuo, to Canon Kabushiki Kaisha. Safety device for camera. 4,236,802, Cl. 354-268.000.
Uchimura, Kunio: *See*—
Fuga, Nobuhiko; Uchimura, Kunio; and Takahashi, Hideyuki, 4,237,326, Cl. 585-4.000.
Uchino, Misao: *See*—
Ebihara, Heihachiro; Sekiya, Fukuo; and Uchino, Misao, 4,237,420, Cl. 328-3.000.
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Lampe, Vaino; Gunnarsson, Staffan H.; and Johansson, Karl-Erik, 4,236,920, Cl. 75-128.00A.
Ueki, Yoshiharu: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.
Uhl, Guenter: *See*—
Krapf, Heinz; Oppenlaender, Knut; and Uhl, Guenter, 4,237,320, Cl. 568-609.000.
Ulbrich, George: *See*—
Merlina, Joseph F.; Redmond, John P.; Ulbrich, George; and Wagner, Richard M., 4,236,777, Cl. 339-17.0CF.
Ullman, Frederick E. Method for controlling the flow of articles and pallets in a conveyor system. 4,236,865, Cl. 414-786.000.
Ullmann, Werner, to Elmapa N.V. Pulse generator for metal machining by electric discharges. 4,237,370, Cl. 219-69.00P.
Ulmer, Harry E.; and Mathew, Champolil T., to Allied Chemical Corporation. Production of alpha-hydroxy oximes. 4,237,069, Cl. 260-566.00A.
Unarco Industries, Inc.: *See*—
Klein, Herbert H., 4,236,642, Cl. 211-207.000.
Union Carbide Corporation: *See*—
Wood, David H., 4,237,526, Cl. 362-158.000.
United Bank of Denver, N. A., personal representative: *See*—
Duron, Ola; Griffin, Richard J., deceased; and United Bank of Denver, N. A., personal representative, 4,236,892, Cl. 23-230.00B.
United Kingdom Atomic Energy Authority: *See*—
Dugdale, Ronald A., 4,236,994, Cl. 204-298.000.
United States Gypsum Company: *See*—
Lange, Robert G.; and Schlotthauer, Harley L., 4,237,260, Cl. 528-230.000.
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Agriculture: *See*—
Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., 4,236,890, Cl. 8-2.50A.
Rayford, Warren E.; and Wing, Robert E., 4,237,271, Cl. 536-47.000.
Air Force: *See*—
Green, Leland D., 4,236,819, Cl. 356-5.000.
Army: *See*—
Brody, Philip S., 4,236,938, Cl. 136-89.0SP.
Oliver, David W., 4,237,209, Cl. 430-317.000.
Polson, Jack R., 4,236,982, Cl. 204-116.000.
Rittenbach, Otto E., 4,237,464, Cl. 343-814.000.
Rodgers, Aubrey, 4,236,414, Cl. 74-5.100.
Smith, Bernard, 4,236,287, Cl. 29-25.180.
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Bamberger, Carlos E.; and Robinson, Paul R., 4,237,105, Cl. 423-306.000.
DeMonbrun, James R.; Schmitt, Charles R.; and Schreyer, James M., 4,237,090, Cl. 422-13.000.
Korenko, Michael K.; Merrick, Howard F.; and Gibson, Robert C., 4,236,943, Cl. 148-32.500.
Lewis, Richard A., 4,236,965, Cl. 176-11.000.
Strongin, Myron; Ghosh, Arup K.; Wiesmann, Harold J.; Rock, Edward B.; and Lutz, Harry A., III, 4,237,151, Cl. 427-74.000.
Wiesmann, Harold J., 4,237,150, Cl. 427-74.000.
Winston, Roland, 4,237,332, Cl. 136-89.0CA.
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Selcuk, M. Kudret. Solar energy receiver for a Stirling engine. 4,236,383, Cl. 60-641.000.
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Berrier, Bobby L., 4,236,684, Cl. 244-52.000.
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Bakewell, Henry P., Jr.; and Johnson, Marguerite A., 4,236,401, Cl. 73-1.0DV.
Cantrell, Ben H.; and Lewis, Bernard L., 4,237,461, Cl. 343-5.0FT.
Manley, Claude E.; Pennella, John J.; Deaton, Donald J.; Crandall, Alan L.; and Hersey, James P., 4,236,546, Cl. 137-88.000.
Morris, Joseph H., 4,236,867, Cl. 415-26.000.
Stone, W. James; and Thomas, Lovic P., 4,236,687, Cl. 244-122.0AD.
Wexler, Bernard L.; Stregack, Joseph A.; and Manuccia, Thomas J., Jr., 4,237,428, Cl. 331-94.50G.
U.S. Philips Corporation: *See*—
Couwenberg, Winston D., 4,237,401, Cl. 313-225.000.
De Niet, Edmond, 4,237,496, Cl. 360-40.000.
Franken, Adrianus J. J.; and Degger, Wolter W. J., 4,237,480, Cl. 358-55.000.
Gustin, Pol A. G. J.; and Shayes, Raymond G. G., 4,237,469, Cl. 346-155.000.
Sanderson, Hendrik J., 4,237,500, Cl. 360-77.000.
Thillays, Jacques C., 4,237,382, Cl. 250-551.000.
van Eijck, Gustavus L. P.; and Simons, Henri J. L., 4,237,498, Cl. 360-72.200.
Vink, Nicolaas G.; Nieuwendijk, Joris A. M.; and Heijnemans, Werner A. L., 4,237,437, Cl. 335-211.000.
Wesselink, Gustaaf A.; Roelofs, Hendrik; and Van Bommel, Cornelis H. M., 4,237,400, Cl. 313-204.000.
United Technologies Corporation: *See*—
Grantham, Daniel H., 4,236,984, Cl. 204-129.000.
Hucul, Elias, Jr.; and Gladden, Robert E., 4,236,870, Cl. 416-97.00R.
Laurello, Vincent P., 4,236,869, Cl. 416-95.000.
Manty, Brian A.; Liss, Herbert R.; and Lada, Henry, 4,236,940, Cl. 148-6.200.
Sherman, Robert; Rothman, Edward A.; and Mandelbaum, William, 4,236,873, Cl. 416-204.00R.
University of Illinois Foundation: *See*—
Payne, David A.; Park, Sang M.; and Jahnke, Otto C., 4,237,084, Cl. 264-61.000.
Uno, Hitoshi; Nagai, Yasutaka; Karasawa, Tadahiko; and Furukawa, Kiyoshi, to Dainippon Pharmaceutical Co., Ltd. 2-(4-Ethyl-1-piperazinyl)-4-phenylquinoline, process for preparation thereof, and composition thereof. 4,237,135, Cl. 424-250.000.
UOP Inc.: *See*—
Jackson, Denise M.; and Tsuda, Yoshihisa, 4,237,231, Cl. 435-234.000.
Urban, Peter; Stauter, John C.; and Tolley, William K., 4,237,104, Cl. 423-242.000.
Winter, George R., III, 4,237,327, Cl. 585-450.000.
Winter, George R., III, 4,237,328, Cl. 585-456.000.
Up-Right, Inc.: *See*—
Claxton, Gerald L., 4,236,371, Cl. 56-330.000.
Upjohn Company, The: *See*—
DeGuiseppi, David T.; and Kolakowski, Richard A., 4,237,238, Cl. 521-131.000.
Johnson, Roy A., 4,237,059, Cl. 260-345.200.
Johnson, Roy A., 4,237,277, Cl. 542-426.000.
Upson, Donald A.; and Steklenski, David J., to Eastman Kodak Company. Conductive polyanaline salt-latex compositions, elements and processes. 4,237,194, Cl. 428-922.000.
Urban, Peter; Stauter, John C.; and Tolley, William K., to UOP Inc. Flue gas treatment for sulfur dioxide removal. 4,237,104, Cl. 423-242.000.
Utsumi, Kazuaki: *See*—
Yonezawa, Masatomo; Utsumi, Kazuaki; and Ohno, Tomeji, 4,236,928, Cl. 106-39.500.
Vachhani, Vasantrai A.: *See*—
Hughes, Richard L.; Soderstrom, Melvin A.; Vachhani, Vasantrai A.; and Weisenburger, Lawrence P., 4,236,778, Cl. 339-97.00P.
Valayil, Silvester P.; and Elias, Moenes L., to Dart Industries Inc. Dissolution of metals utilizing an aqueous H_2SO_3—H_2O_2-mercapto containing heterocyclic nitrogen etchant. 4,236,957, Cl. 156-666.000.
Valmet Oy: *See*—
Kankaanpa , Matti, 4,236,962, Cl. 162-204.000.
Van Bennekom, Carl F.; Rogers, Donald E.; and Scannell, Edward F., to General Electric Company. Electrical current indicating meter. 4,237,418, Cl. 324-150.000.
Van Bommel, Cornelis H. M.: *See*—
Wesselink, Gustaaf A.; Roelofs, Hendrik; and Van Bommel, Cornelis H. M., 4,237,400, Cl. 313-204.000.
van der Lely, Cornelis. Coupling member. 4,236,613, Cl. 188-300.000.

Vander Wall, Eugene M.: *See—*
Anderson, Roger E.; and Vander Wall, Eugene M., 4,236,464, Cl. 110-238.000.

van Eijck, Gustavus L. P.; and Simons, Henri J. L., to U.S. Philips Corporation. Method of addressing and/or locating information on a record carrier. 4,237,498, Cl. 360-72.200.

van Konynenburg, Peter V.; Au, Andrew; Rauwendaal, Chris; and Gotcher, Alan J., to Raychem Corporation. Low resistivity PTC compositions. 4,237,441, Cl. 338-22.00R.

Vannice, Steven D.: *See—*
Larson, Willis A.; Vannice, Steven D.; and Jesson, Joseph E., 4,237,358, Cl. 200-159.00B.

Vantini, Nereo; and Marini, Paolo, to Centro Sperimentale Metallurgico S.p.A. Applying annealing separators to oriented grain electrical steel sheet. 4,236,986, Cl. 204-181.00N.

Van Twuyver, Robert; and Johnson, James M., to Northeast Shipley Company, Ltd. Bivalve mollusk shucking apparatus and method. 4,236,276, Cl. 17-48.000.

Varda, Eugene I., to Pullman Incorporated. Door locking and actuating mechanism for hopper car. 4,236,458, Cl. 105-308.00R.

Varian Associates, Inc.: *See—*
Karp, Arthur, 4,237,402, Cl. 315-3.500.

Varta Batterie, A.G.: *See—*
Kothe, Hans K.; and Strasen, Gunter, 4,237,411, Cl. 320-21.000.

Vater, Wulf: *See—*
Tacke, Reinhold; Bentlage, Anke; Towart, Robertson; and Vater, Wulf, 4,237,137, Cl. 424-251.000.

VDO Adolf Schindling A.G.: *See—*
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VEB Arzneimittelwerk Dresden: *See—*
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, 4,237,291, Cl. 544-346.000.

VEB Pentacon Dresden Kamera- und Kinowerke: *See—*
Noack, Rolf; Kromer, Karl; and Zimmet, Hans, 4,236,797, Cl. 354-152.000.

VEB Schwermaschinenbau-Kombinat Ernst Thalmann Magdeburg: *See—*
Worgt, Walter; Pechau, Gerhard; Wyzgol, Ewald; and Franz, Manfred, 4,236,551, Cl. 140-1.000.

Velsicol Chemical Corporation: *See—*
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Vereinigte Baubeschelagfrabriken Gretsch & Co. GmbH: *See—*
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Vereinigte Osterreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft: *See—*
Sigott, Siegfried; Kogler, Peter; Schetina, Otto; and Zitz, Alfred, 4,236,627, Cl. 198-514.000.

Vesela, Hana, deceased: *See—*
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.

Vesely, Jiri, heir: *See—*
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.

Veznik, Zdenek: *See—*
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Pampouchidis, Georgios; and Honig, Helmut, 4,237,038, Cl. 260-29.2TN.

Vibert, Edward J.: *See—*
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Vick, William L.: *See—*
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Victor Company of Japan, Limited: *See—*
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Yokokawa, Sumio; and Watanabe, Yasuaki, 4,237,407, Cl. 315-389.000.

Videocolor S.A.: *See—*
Lavigne, Andre, 4,237,479, Cl. 358-33.000.

Vincent, Ogden W. Dome solar air heater. 4,236,507, Cl. 126-450.000.

Vink, Nicolaas G.; Nieuwendijk, Joris A. M.; and Heijnemans, Werner A. L., to U.S. Philips Corporation. Deflection unit for color television display tubes. 4,237,437, Cl. 335-211.000.

Vinther, Jette V.: *See—*
Vinther, Knud; and Vinther, Jette V., 4,236,363, Cl. 52-285.000.

Vinther, Knud; and Vinther, Jette V. Assembly element sets. 4,236,363, Cl. 52-285.000.

Vinyl Clad Proprietary Limited: *See—*
Edwards, Frederick H., 4,236,954, Cl. 156-352.000.

Vjugov, Oleg N.: *See—*
Batjukov, Vladimir I.; Vjugov, Oleg N.; Fadeev, Alexandr I.; and Shkhian, Tsolak G., 4,236,967, Cl. 176-30.000.

Voelkl, Erfried: *See—*
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, 4,237,318, Cl. 562-609.000.

Vogt, Robert L., to General Electric Company. Sectoral combustor for burning low-BTU fuel gas. 4,236,378, Cl. 60-757.000.

Volkamer, Klaus: *See—*
Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, 4,237,330, Cl. 585-807.000.

von Aschwege, Gerd: *See—*
Boettge, Horst; Mitzel, Wilhelm; Bernardi, Herbert; Geier, Josef; Osswald, Norbert; von Aschwege, Gerd; and Schaetz, Robert, 4,236,639, Cl. 209-534.000.
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von der Crone, Jost: *See—*
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,237,286, Cl. 544-225.000.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,237,292, Cl. 546-7.000.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,237,293, Cl. 546-7.000.

von Harpe, Hannes; Bottenbruch, Ludwig; Peltzer, Bernd; and Schulz-Walz, Hansjochen, to Bayer Aktiengesellschaft. Molding composition based on unsaturated polyesters. 4,237,244, Cl. 525-171.000.

Vredenburg, Edric W., Sr. Self-cleaning tree girdling device. 4,236,308, Cl. 30-121.000.

W. R. Grace & Co.: *See—*
Fulmer, Glenn E.; and Murch, Robert M., 4,237,182, Cl. 428-310.000.
Hartdegen, Frank J.; and Swann, Wayne E., 4,237,229, Cl. 435-182.000.

Wachter, Michael P.: *See—*
Hajos, Zoltan G.; and Wachter, Michael P., 4,237,055, Cl. 260-340.600.

Wacker Werke GmbH & Co. KG: *See—*
Riedl, Franz, 4,236,417, Cl. 74-87.000.

Wada, Minoru: *See—*
Nahara, Akira; Wada, Minoru; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,237,468, Cl. 346-135.100.

Wada, Shuhei: *See—*
Kawamura, Hideo; Fukami, Ichiro; Wada, Shuhei; and Yoshikawa, Fusayuki, 4,237,261, Cl. 528-272.000.

Wada, Toshihiko: *See—*
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Hiromitsu; Suzuki, Kinzaburo; Okubo, Azuma; Nakanoya, Takishi; Miura, Katsunori; and Sagi, Tadao, 4,237,233, Cl. 435-254.000.

Waegaert, Pierre, to Service d'Exploitation Industrielle des Tabacs et des Allumette. Method for wrapping cigars or like articles in an outer envelope of natural tobacco. 4,236,536, Cl. 131-33.000.

Wafios, Maschinenfabrik, Wagner, Ficker & Schmid (GmbH & Co. KG): *See—*
Lange, Gerhard, 4,236,397, Cl. 72-137.000.

Wagner Electric Corporation: *See—*
Pecota, Walter, 4,237,367, Cl. 219-265.000.

Wagner, Richard M.: *See—*
Merlina, Joseph F.; Redmond, John P.; Ulbrich, George; and Wagner, Richard M., 4,236,777, Cl. 339-17.0CF.

Wagner, Roland W.; and Heim, Clarence W., Jr., to Warrick Equipment Corp. Apparatus for and method of sequentially transporting, accumulating and stacking a predetermined number of groups of individual similar flat articles and thereafter depositing the entire stack on a conveyor. 4,236,855, Cl. 414-42.000.

Wagner, Ulrich: *See—*
Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, 4,237,330, Cl. 585-807.000.

Wakatsuki, Masao: *See—*
Komatsu, Shigeru; Takahashi, Satoshi; Suzuki, Kouji; and Wakatsuki, Masao, 4,236,832, Cl. 357-51.000.

Waldron, Wesley K., to General Electric Company. Single-electrode capacitance touchpad sensor systems. 4,237,421, Cl. 328-5.000.

Walker, Craig A.: *See—*
Walker, Lila A.; Walker, Richard A.; and Walker, Craig A., 4,236,479, Cl. 116-28.00R.

Walker, Leon; and Berry, Howard S., to Berry, Howard S. Ore classifier. 4,237,001, Cl. 209-442.000.

Walker, Lila A.; Walker, Richard A.; and Walker, Craig A. Headlights reminder. 4,236,479, Cl. 116-28.00R.

Walker, Loren H.: *See—*
Cutler, John H.; and Walker, Loren H., 4,237,531, Cl. 363-58.000.

Walker, Richard A.: *See—*
Walker, Lila A.; Walker, Richard A.; and Walker, Craig A., 4,236,479, Cl. 116-28.00R.

Walker, Terence, to American Optical Corporation. Cuvette and standard holder for oximeters. 4,236,820, Cl. 356-41.000.

Wallevik, Oddmund; and Dessen, Erik, to Norsk Hydro a.s. Method of manufacturing melted iron oxide. 4,237,111, Cl. 423-632.000.

Walsh, James L.: *See—*
Anantha, Narasipur G.; Bhatia, Harsaran S.; and Walsh, James L., 4,236,294, Cl. 29-578.000.

Walz, Klaus; and Tamer, Ergun, to Bayer Aktiengesellschaft. Esters of acylated aminocarboxylic acid containing compounds. 4,237,268, Cl. 536-4.000.

Ward, John D. Cutting saw and concrete groover. 4,236,356, Cl. 51-176.000.

Warner, Robert A., to Tri-Tronics Company, Inc. Start/stop control of conveying means. 4,236,604, Cl. 186-61.000.

Warrick Equipment Corp.: *See—*
Wagner, Roland W.; and Heim, Clarence W., Jr., 4,236,855, Cl. 414-42.000.

Washburn, Robert B.: *See—*
Slama, William R.; Washburn, Robert B.; and Semanisin, Dale J., 4,237,177, Cl. 428-215.000.

Washington University: *See—*
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Watanabe, Koji: *See—*
Omote, Kazuaki; and Watanabe, Koji, 4,236,274, Cl. 16-150.000.
Watanabe, Seiichi: *See—*
Ito, Higashi; and Watanabe, Seiichi, 4,237,074, Cl. 260-654.00R.
Watanabe, Yasuaki: *See—*
Yokokawa, Sumio; and Watanabe, Yasuaki, 4,237,407, Cl. 315-389.000.
Watanabe, Yoshihisa: *See—*
Kitagawa, Sadao; Okada, Isao; Saito, Teruo; Masukawa, Shoichi; Watanabe, Yoshihisa; and Imanari, Makoto, 4,237,254, Cl. 526-122.000.
Water Front Products, Inc.: *See—*
Norris, Thomas E.; and Spence, Bertle, 4,236,477, Cl. 114-222.000.
Watson, James, Jr.: *See—*
Eliassen, John D.; Lee, Gim F., Jr.; and Watson, James, Jr., 4,237,265, Cl. 528-496.000.
Waypa, John, Jr.: *See—*
Hook, Dale L.; and Waypa, John, Jr., 4,237,429, Cl. 331-94.50G.
Weaver, Lelland A.: *See—*
Liu, Chi-Sheng; Williams, Roy K.; and Weaver, Lelland A., 4,237,430, Cl. 331-94.50D.
Webb, John T. H.: *See—*
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Weber, Adam: *See—*
Mutschler, Erich; Prohaska, Hans; and Weber, Adam, 4,237,529, Cl. 362-272.000.
Webers, Werner: *See—*
Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, 4,237,325, Cl. 568-896.000.
Weddigen, Gert, to Brown, Boveri & Cie AG. Electrochemical storage cell. 4,237,200, Cl. 429-102.000.
Wedel, John A.: *See—*
Anderson, Richard D.; and Wedel, John A., 4,236,815, Cl. 355-29.000.
Weigel, Horst: *See—*
Melcher, Gerhard; and Weigel, Horst, 4,236,916, Cl. 75-85.000.
Weimer, Paul K., to RCA Corporation. Charge transfer imager. 4,237,477, Cl. 358-44.000.
Weinberg, Morton, to Motorola, Inc. Pager with escalating audio alert signal level. 4,237,448, Cl. 340-311.000.
Weiner, Irving L., to Ortho Diagnostics, Inc. Gated baseline corrector. 4,237,424, Cl. 328-175.000.
Weinert, Friedrich. Heat expansion machine. 4,236,377, Cl. 60-641.000.
Weinhold, Otto, to Sandco Ltd. Apparatus for producing drops or portions of liquid and viscous materials and for producing pellets therefrom. 4,236,882, Cl. 425-6.000.
Weinstein, Stephen B.: *See—*
Gitlin, Richard D.; Meadors, Howard C., Jr.; and Weinstein, Stephen B., 4,237,554, Cl. 375-15.000.
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Hughes, Richard L.; Soderstrom, Melvin A.; Vachhani, Vasantrai A.; and Weisenburger, Lawrence P., 4,236,778, Cl. 339-97.00P.
Weiss, Martin J.: *See—*
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,237,316, Cl. 562-503.000.
Welch, Stanley B., to General Electric Company. Temperature sensor for glass-ceramic cooktop. 4,237,368, Cl. 219-449.000.
Wellington, Roger D., to Augat Inc. Electrical contact with improved means for solder wicking and degassing. 4,236,776, Cl. 339-17.00R.
Wells, George H., to Technology Marketing, Inc. Multi-layered back plane for a computer system. 4,237,546, Cl. 364-900.000.
Wendt, Gary R., to Crane, Wendy S., a part interest. Spa cover. 4,236,259, Cl. 4-172.120.
Werker, Ekke; and Emsperger, Werner, to Kraftwerk Union Aktiengesellschaft. Device for removing heat of decomposition in a steam power plant heated by nuclear energy. 4,236,968, Cl. 176-38.000.
Werner, Michel: *See—*
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Wessel, Josef: *See—*
Wessel, Josef A; Muller, Manfred; Heinemann, Otto; and Bredenholler, Norbert, 4,236,997, Cl. 209-144.000.
Wessel, Josef A; Muller, Manfred; Heinemann, Otto; and Bredenholler, Norbert, to Wessel, Josef; and Polysius AG. Air separator apparatus. 4,236,997, Cl. 209-144.000.
Wesselink, Gustaaf A.; Roelofs, Hendrik; and Van Bommel, Cornelis H. M., to U.S. Philips Corporation. Low-pressure discharge lamp with tortuous discharge path. 4,237,400, Cl. 313-204.000.
West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., to Leesona Corporation. Container lining. 4,236,885, Cl. 425-514.000.
West, Joe E. Torque transmitting and blocking device. 4,236,618, Cl. 192-8.00R.
Westcott, Randy L. Tamper proof case for the protection of sensitive papers. 4,236,463, Cl. 109-33.000.
Westerdahl, Henri, to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG. Process for the filleting of fish. 4,236,275, Cl. 17-46.000.
Westinghouse Electric Corp.: *See—*
Liu, Chi-Sheng; Williams, Roy K.; and Weaver, Lelland A., 4,237,430, Cl. 331-94.50D.
Playfoot, Kerwin C.; and Goldstein, Norman P., 4,237,380, Cl. 250-370.000.
Sisk, Francis J., 4,236,874, Cl. 417-315.000.
Ying, Sui-chun; Smith, Joseph L., Jr.; and Baumann, Kai J., 4,237,392, Cl. 310-52.000.
Wexler, Bernard L.; Stregack, Joseph A.; and Manuccia, Thomas J., Jr., to United States of America, Navy. 15.9 Micron acetylene laser. 4,237,428, Cl. 331-94.50G.
Weyland, Peter: *See—*
Jarre, Wolfgang; Weyland, Peter; and Mueller, Gerhard, 4,237,240, Cl. 521-159.000.
Whale Scientific, Inc.: *See—*
Duron, Ola; Griffin, Richard J., deceased; and United Bank of Denver, N. A., personal representative, 4,236,892, Cl. 23-230.00B.
Wharton Engineers (Elstree) Limited: *See—*
Hicks, Raymond J.; and Webb, John T. H., 4,236,696, Cl. 254-175.700.
Whateley, Eric A., to David Brown Gear Industries Limited. Vehicles. 4,236,617, Cl. 192-3.300.
Wheelabrator-Frye Inc.: *See—*
Bergh, John C., 4,236,466, Cl. 110-281.000.
Wheeler, Raymond L., to British Hovercraft Corporation. Air cushion vehicle flexible skirts. 4,236,593, Cl. 180-128.000.
Wheeler, Robert G., to Wood Processes, Oregon Ltd. Rigid building component and method of manufacture. 4,236,365, Cl. 52-455.000.
Wheeler, Ronald E.: *See—*
King, William F.; and Wheeler, Ronald E., 4,237,121, Cl. 424-200.000.
White, John F.; Taylor, Edward C.; and Chiang, Chih-Shu, to Emery Industries, Inc. Thallium(III) reagents supported on montmorillonite clay minerals and oxythallation processes for utilizing same. 4,237,306, Cl. 560-105.000.
White, Lorell. Signaling fishing stand. 4,236,339, Cl. 43-17.000.
White Sea & Baltic Company Limited, The: *See—*
Epstein, David; and Bugg, John, 4,236,569, Cl. 164-43.000.
Whitney, Donald B.; Grolman, Bernard; and Richards, William, to American Optical Corporation. Ophthalmic refracting device. 4,236,793, Cl. 351-21.000.
Wichinsky, Michael, to Bell-Fruit Manufacturing Co. Limited. Game machines. 4,236,717, Cl. 273-143.00R.
Widdig, Arno: *See—*
Kabbe, Hans-Joachim; Widdig, Arno; Stendel, Wilhelm; and Roessler, Peter, 4,237,162, Cl. 424-283.000.
Widdowson, Richard E., to General Motors Corporation. Pressure operated hydraulic control valve. 4,236,875, Cl. 417-222.000.
Wiechers, Herbert: *See—*
Minz, Franz-Rudolf; and Wiechers, Herbert, 4,236,983, Cl. 204-129.000.
Wiedenman, Gregory B., to Sperry Rand Corporation. Apparatus and method for receiving and servicing request signals from peripheral devices in a data processing system. 4,237,535, Cl. 364-200.000.
Wieland, Erich G., to Koenig & Bauer Aktiengesellschaft. Vibration damping mechanism in a rotary printing press. 4,236,448, Cl. 101-216.000.
Wiener Bruckenbau und l Eisenkonstruktions Atkiengesellschaft: *See—*
Willi, Josef, 4,236,857, Cl. 414-139.000.
Wiesmann, Harold J., to United States of America, Energy. Method of producing hydrogenated amorphous silicon film. 4,237,150, Cl. 427-74.000.
Wiesmann, Harold J.: *See—*
Strongin, Myron; Ghosh, Arup K.; Wiesmann, Harold J.; Rock, Edward B.; and Lutz, Harry A., III, 4,237,151, Cl. 427-74.000.
Wigmore, Richard: *See—*
Smilges, Robert; and Wigmore, Richard, 4,236,690, Cl. 251-30.000.
Wihl, Manfred G., to Solarex Corporation. Solar collector device. 4,236,937, Cl. 136-89.0PC.
Wilbur, Clayton V.: *See—*
Hafer, Cameron H.; and Wilbur, Clayton V., 4,236,834, Cl. 400-120.000.
Wilczynski, Mieczylaw. Bricklaying apparatus. 4,236,367, Cl. 52-749.000.
Wildman, John R., to Marvin Glass & Associates. Toy power tool. 4,236,343, Cl. 46-39.000.
Wilk, John J. Anchoring devices. 4,236,688, Cl. 248-71.000.
Willard, John W., Sr., to CAW Industries, Inc. Process for treating solid carbonaceous fossil fuels and the products thus prepared. 4,237,101, Cl. 423-20.000.
Willi, Josef, to Wiener Bruckenbau und l Eisenkonstruktions Atkiengesellschaft. Apparatus for the continuous unloading of ships. 4,236,857, Cl. 414-139.000.
Williams, Alfred S., Jr.: *See—*
Hall, John D.; and Williams, Alfred S., Jr., 4,236,325, Cl. 35-12.00S.
Williams, Harvey F.; Cole, Raymond C.; and Donaghy, James G., to International Platex, Inc. Women's undergarments including ventilated crotch assembly. 4,236,257, Cl. 2-406.000.
Williams, John W.; and Becker, Frank C., to Abbott Laboratories. 1-Acryloyl-3-(substituted) phenyl ureas. 4,237,166, Cl. 424-310.000.
Williams, Orlan G.; and Skaggs, Robert L. Method of forming a parabolic trough. 4,236,399, Cl. 72-295.000.
Williams, Roy K.: *See—*
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Williamson, Alton M., to ACF Industries, Incorporated. Controlled floating seat for gate valves. 4,236,692, Cl. 251-328.000.
Williamson, John L.: *See—*
Olds, Linda W.; and Olds, Merton R., 4,236,488, Cl. 119-5.000.
Willy, John R.: *See—*
Lapp, John; and Willy, John R., 4,236,484, Cl. 118-663.000.

Wilson, Charles D.: *See—*
Cochran, Gary L.; Wilson, Charles D.; and Klee, Maurice, 4,236,422, Cl. 74-470.000.

Wilson, James R.: *See—*
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., 4,237,070, Cl. 260-580.000.

Wilson, Lester E.: *See—*
Eby, Richard L.; and Wilson, Lester E., 4,237,198, Cl. 429-93.000.

Wilson, Samuel R., to General Electric Company. Capacitor with a case seal. 4,237,519, Cl. 361-327.000.

Wilt, Charles R., Jr.: *See—*
Heard, Harold; and Wilt, Charles R., Jr., 4,236,318, Cl. 34-10.000.

Winans, Ralph P. Railroad rail holder. 4,236,671, Cl. 238-39.000.

Winchell, David A.: *See—*
Ganz, Rudolf V., Jr.; and Winchell, David A., 4,236,646, Cl. 215-232.000.

Wing, Robert E.: *See—*
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Winkleblack, Robert K., to Electric Power Research Institute, Inc. Apparatus for sealing a rotatable shield plug in a liquid metal nuclear reactor. 4,236,971, Cl. 176-87.000.

Winkler, Otmar: *See—*
Meining, Hans; Pfaller, Egon; Winkler, Otmar; and Kittel, Hilmar, 4,236,766, Cl. 308-15.000.

Winston, Roland, to United States of America, Energy. Nonimaging radiant energy direction device. 4,237,332, Cl. 136-89.0CA.

Winter, George R., III, to UOP Inc. Process for HF-catalyzed alkylation of aromatic hydrocarbons. 4,237,327, Cl. 585-450.000.

Winter, George R., III, to UOP Inc. Process for HF-catalyzed alkylation of aromatic hydrocarbons. 4,237,328, Cl. 585-456.000.

Winton, Wilbur P.: *See—*
West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., 4,236,885, Cl. 425-514.000.

Wirt, Leslie S., to Lockheed Corporation. Rotating self-cleaning sound absorber for ducts. 4,236,598, Cl. 181-231.000.

Wissner, Allan, to American Cyanamid Company. 15-Deoxy-16-hydroxy-16-methyl-Δ19-prostaglandins of the E and F series. 4,237,307, Cl. 560-121.000.

Wolf, William E.: *See—*
Piovoso, Michael J.; Smith, Edmund H., Jr.; and Wolf, William E., 4,237,539, Cl. 364-552.000.

Wollner, Johannes: *See—*
Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, 4,237,325, Cl. 568-896.000.

Wong, Patrick S.: *See—*
Langston, Jimmy B.; Leeper, Harold; and Wong, Patrick S., 4,236,517, Cl. 128-275.000.

Wood, David H., to Union Carbide Corporation. Battery operated device having a waterproof housing and gas discharge vent. 4,237,526, Cl. 362-158.000.

Wood, Loren E.; Forsythe, Calvin C.; Strelow, John L.; Short, Edward H., III; Allen, Jerome D.; and Clift, Miner E., to Black, Sivalls & Bryson. Safety pressure relief apparatus. 4,236,648, Cl. 220-89.00A.

Wood Processes, Oregon Ltd.: *See—*
Wheeler, Robert G., 4,236,365, Cl. 52-455.000.

Woods, Lee O.; and Haag, Donald L., to General Electric Company. Electrical control. 4,237,508, Cl. 361-24.000.

Woolford, Anthony Y. Self securing merchandising kiosk. 4,236,359, Cl. 52-66.000.

Woolhouse, Geoffrey R.; Huggins, Harold A.; Anderson, Stephen I.; and Scholl, Frederick R., to Exxon Research & Engineering Co. Etch method of cleaving semiconductor diode laser wafers. 4,236,296, Cl. 29-583.000.

Wooten, William. Vertical horizontal rescue system. 4,236,600, Cl. 182-43.000.

Wootton, Gordon; and Moore, Richard W., to Beecham Group Limited. Prostaglandin analogues. 4,237,131, Cl. 424-248.510.

Worgt, Walter; Pechau, Gerhard; Wyzgol, Ewald; and Franz, Manfred, to VEB Schwermaschinenbau-Kombinat Ernst Thalmann Magdeburg. Method of and apparatus for cooling rolled wire. 4,236,551, Cl. 140-1.000.

Wright, Joseph B., to Jamesbury Corporation. Ball valve to relieve cavity pressure. 4,236,691, Cl. 251-315.000.

Wright, Winston F. Dental cleaning device. 4,236,889, Cl. 433-86.000.

Wunsch, Gerd: *See—*
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelki, Erfried, 4,237,318, Cl. 562-609.000.

Wurmb, Rolf: *See—*
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Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, to Merck Patent Gesellschaft mit beschrankter Haftung. Antibodies against creatinekinase-M8 and process for the production thereof. 4,237,044, Cl. 260-112.00B.

Wyckoff, Charles W. Direction-indicating surface marker strip for roadways and the like. 4,236,788, Cl. 350-97.000.

Wyzgol, Ewald: *See—*
Worgt, Walter; Pechau, Gerhard; Wyzgol, Ewald; and Franz, Manfred, 4,236,551, Cl. 140-1.000.

Xander, William J.: *See—*
Niggemeier, Joseph F.; Stoller, David A.; and Xander, William J., 4,236,853, Cl. 410-77.000.

Xerox Corporation: *See—*
Kermisch, Dorian, 4,236,809, Cl. 355-4.000.
Yamamoto, Akimitsu, 4,237,495, Cl. 358-282.000.

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Yamada, Minoru: *See—*
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF DECEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ashland Oil, Inc.: *See*—
Moore, William P., Jr., Re. 30,442, Cl. 260-17.300.

Borg-Warner Corporation: *See*—
Jeffrey, Joseph O., Re. 30,440, Cl. 74-229.000.

Brunswick Corporation: *See*—
Reynolds, Eugene E., Re. 30,441, Cl. 273-54.00C.

Jeffrey, Joseph O., to Borg-Warner Corporation. Synchronous belt and pulley drive. Re. 30,440, Cl. 74-229.000.

Moore, William P., Jr., to Ashland Oil, Inc. Process for producing stabilized high strength urea-aldehyde insulating foams. Re. 30,442, Cl. 260-17.300.

Reynolds, Eugene E., to Brunswick Corporation. Bowling scoring apparatus and programming system therefor. Re. 30,441, Cl. 273-54.00C.

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Heenan, Sidney A.; and Flanagan, Robert M., 257,586, Cl. D10-113.000.

Be A Doll, Inc.: *See*—
Jackson, Timothy, 257,590, Cl. D21-177.000.

Bobrovniczky, Bert, to Noma Lites Canada Limited. Reel for electric cord. 257,576, 12-2-80, Cl. D8-359.000.

Brown, Robert H. Exit pool for an amusement water slide. 257,591, 12-2-80, Cl. D21-252.000.

Bullock, James H., to Clairol Incorporated. Hair roller. 257,595, 12-2-80, Cl. D28-37.000.

Cadotte, Ernest R.; Hester, Gerald P.; and Husted, Martin D., to MSI Data Corporation. Customer satisfaction terminal, or the like. 257,588, 12-2-80, Cl. D14-45.000.

Clairol Incorporated: *See*—
Bullock, James H., 257,595, Cl. D28-37.000.

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Inoue, Ryoichi, 257,571, Cl. D2-192.000.

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Shaffert, Robert W., 257,589, Cl. D19-88.000.

Finkel, Henry, to Promo Ad Canada Ltd./Ltee. Pill box. 257,584, 12-2-80, Cl. D9-235.000.

Finnieston, Alan. Ankle and foot immobilizer. 257,594, 12-2-80, Cl. D24-64.000.

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Hanaford, Donald E. Seat. 257,573, 12-2-80, Cl. D6-67.000.

Hanaford, Donald E. Diamond design chair back. 257,574, 12-2-80, Cl. D6-197.000.

Hayes, Thomas H., to Ethyl Corporation. Bottle, or similar article. 257,577, 12-2-80, Cl. D9-48.000.

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Jackson, Timothy, to Be A Doll, Inc. Astronaut doll. 257,590, 12-2-80, Cl. D21-177.000.

Kinsey, Albert L. Combined sink and table. 257,592, 12-2-80, Cl. D23-61.000.

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Vogel, Harold E. Combined fireplace air vent and ash drop cover. 257,593, 12-2-80, Cl. D23-127.000.

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CLASSIFICATION OF PATENTS

ISSUED DECEMBER 2, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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17 R 4,236,533
21 B 4,236,534
21 R 4,236,535
33 4,236,536
134 4,236,537
149 4,236,538
175 4,236,539

CLASS 132

40 4,236,540

CLASS 134

2 4,236,935
7 4,236,936
104 4,236,541
153 4,236,542

CLASS 135

3 R 4,236,543
66 4,236,544

CLASS 136

89 CA 4,237,332
89 PC 4,236,937
89 SP 4,236,938

CLASS 137

13 4,236,545
88 4,236,546
243 4,236,547
335 4,236,548
343 4,236,549

CLASS 139

421 4,236,550

CLASS 140

1 4,236,551

CLASS 141

98 4,236,552
198 4,236,553

CLASS 144

32 4,236,555
34 R 4,236,554
193 A 4,236,556
315 R 4,236,557
318 4,236,558

CLASS 148

2 4,236,939
6.2 4,236,940
16.5 4,236,941
16.6 4,236,942
32.5 4,236,943
35 4,236,944
105 4,236,945
108 4,236,946
171 4,236,947
188 4,236,948

CLASS 150

1.6 4,236,559
46 4,236,560

CLASS 151

19 R 4,236,561
69 4,236,562

CLASS 152

354 R 4,236,563
359 4,236,564
427 4,236,565

CLASS 156

49 4,236,949
71 4,236,950
4,236,951
93 4,236,952
244.13 4,236,953
352 4,236,954
353 4,236,955
527 4,236,956
666 4,236,957

CLASS 159

16 S 4,236,958

CLASS 160

130 4,236,566
178 R 4,236,567

CLASS 162

23 4,236,959
30 K 4,236,960
52 4,236,961
204 4,236,962
271 4,236,963

CLASS 164

41 4,236,568
43 4,236,569
49 4,236,570
85 4,236,571

CLASS 165

38 4,236,572
54 4,236,573
67 4,236,574
113 4,236,575
134 R 4,236,576
175 4,236,577
181 4,236,578

CLASS 166

274 4,236,579
301 4,236,580

CLASS 171

56 4,236,581

CLASS 172

22 4,236,582
266 4,236,583
385 4,236,584
587 4,236,585
779 4,236,586
4,236,587

CLASS 173

48 4,236,588
169 4,236,589

CLASS 174

21 R 4,237,333
25 R 4,237,334
70 R 4,237,337
92 4,237,335
151 4,237,336

CLASS 176

3 4,236,964
11 4,236,965
30 4,236,966
4,236,967
38 4,236,968
61 4,236,969
87 4,236,970
4,236,971

CLASS 177

200 4,236,590

CLASS 178

23 A 4,237,338

CLASS 179

1 CN 4,237,339
1 D 4,237,340
1 J 4,237,343
1 MG 4,237,341
1 PC 4,237,342
2 A 4,237,344
16 E 4,237,345
35 4,237,346
100.41 D 4,237,349
100.41 M 4,237,347
100.41 R 4,237,348
103 4,237,350

CLASS 180

41 4,236,591
68 P 4,236,592
128 4,236,593
167 4,236,594
243 4,236,595
307 4,236,596

CLASS 181

224 4,236,597
231 4,236,598

CLASS 182

33 4,236,599
43 4,236,600
76 4,236,601
187 4,236,602
204 4,236,603

CLASS 186

61 4,236,604

CLASS 187

94 4,236,605

CLASS 188

1 B 4,236,606
4,236,607
43 4,236,608
67 4,236,609
76 4,236,610
79.5 P 4,236,611
242 4,236,612
300 4,236,613
326 4,236,614

CLASS 190

52 4,236,615

CLASS 191

59.1 4,236,616

CLASS 192

3.3 4,236,617
8 R 4,236,618
45 4,236,619
48.8 4,236,620
82 T 4,236,621

CLASS 194

87 4,236,622

CLASS 198

333 4,236,623
399 4,236,624
454 4,236,625
488 4,236,626
514 4,236,627
525 4,236,628
577 4,236,630
583 4,236,631
690 4,236,632

CLASS 200

5 A 4,237,351
51.03 4,237,352
52 R 4,237,353
83 C 4,237,354
147 R 4,237,355
148 A 4,237,356
153 SC 4,237,357
159 B 4,237,358

CLASS 202

242 4,236,972

CLASS 203

10 4,236,973
11 4,236,974
14 4,236,975

CLASS 204

15 4,236,976
29 4,236,977
57 4,236,978
98 4,236,979
4,236,980
113 4,236,981
116 4,236,982
129 4,236,983
4,236,984
129.43 4,236,985
181 N 4,236,986
195 M 4,236,987
195 R 4,236,988
252 4,236,989
272 4,236,991
275 4,236,990
278 4,236,992
294 4,236,993
298 4,236,994

CLASS 206

213.1 4,236,633
287 4,236,634
456 4,236,635
461 4,236,636
467 4,236,637
493 4,236,638

CLASS 208

11 LE 4,236,995
134 4,236,996

CLASS 209

144 4,236,997
246 4,236,998
250 4,236,999
319 4,237,000
442 4,237,001
534 4,236,639
587 4,236,640

CLASS 210

11 4,237,003
18 4,237,002
40 4,237,004
43 4,237,005
84 4,237,006
181 4,237,007
205 4,237,008
227 4,237,009
232 4,237,010
237 4,237,011
242 S 4,237,012
321 B 4,237,013
330 4,237,014
444 4,237,015

CLASS 211

87 4,236,641
207 4,236,642

CLASS 212

145 4,236,643

CLASS 213

62 R 4,236,644
69 4,236,645

CLASS 215

232 4,236,646
247 4,236,647

CLASS 219

10.41 4,237,359
4,237,360
69 P 4,237,370
76.1 4,237,361
76.14 4,237,362
121 LC 4,237,364
121 LM 4,237,363
139 4,237,365
219 4,237,366
265 4,237,367
449 4,237,368
503 4,237,369

CLASS 220

89 A 4,236,648

CLASS 221

90 4,236,649
226 4,236,650

CLASS 222

82 4,236,651
92 4,236,652
153 4,236,653
238 4,236,654
465 4,236,655
517 4,236,656
529 4,236,629

CLASS 224

153 4,236,657
250 4,236,658

CLASS 226

58 4,236,659
95 4,236,660

CLASS 228

184 4,236,661

CLASS 229

36 4,236,740
39 B 4,236,662
44 CB 4,236,663
49 4,236,664

CLASS 232

39 4,236,665

CLASS 233

26 4,236,666

CLASS 235

92 EV 4,237,373
92 GA 4,237,372
92 PD 4,237,371
92 SB 4,237,374
443 4,236,667
487 4,237,375
4,237,376

CLASS 236

1 G 4,236,668
92 B 4,236,669

CLASS 238

8 4,236,670
39 4,236,671

CLASS 239

139 4,236,672
172 4,236,673
296 4,236,674

CLASS 241

65 4,236,675
74 4,236,676
172 4,236,677

CLASS 242

55.19 A 4,236,678
55.53 4,236,679
74.1 4,236,680
198 4,236,681
4,236,682

CLASS 244

52 4,236,684
83 D 4,236,685
116 4,236,686
122 AD 4,236,687

CLASS 248

71 4,236,688

CLASS 249

204 4,236,689

CLASS 250

214 R 4,237,377
223 4,237,378
302 4,237,379
370 4,237,380
462 4,237,381
551 4,237,382
578 4,237,383

CLASS 251

30 4,236,690
315 4,236,691
328 4,236,692

CLASS 252

8.55 D 4,237,017
4,237,018
8.8 4,237,016
47.5 4,237,019
4,237,020
49.5 4,237,021
51.5 A 4,237,022
70 4,237,023
99 4,237,024
192 4,237,025
299 4,237,026
301.4 H 4,237,027
359 B 4,237,028
429 B 4,237,029
432 4,237,030
438 4,237,031
462 4,237,032

CLASS 254

166 4,236,693
167 4,236,694
172 4,236,695
175.7 4,236,696

CLASS 256

1 4,236,697
23 4,236,698

CLASS 260

6 4,237,033
17.3 Re.30,442
18 N 4,237,034
28 R 4,237,035
4,237,036
28.5 AS 4,237,052
28.5 AV 4,237,037
29.2 N 4,237,040
29.2 R 4,237,039
29.2 TN 4,237,038
33.6 UA 4,237,041
45.75 S 4,237,043
45.8 R 4,237,042
112 B 4,237,044
112.5 R 4,237,045
4,237,046
4,237,047
207.1 4,237,048
239 BD 4,237,049
242.2 4,237,050
245.2 R 4,237,051
333 4,237,053
340.6 4,237,054
4,237,055
340.7 4,237,056
343.3 R 4,237,057
4,237,058
345.2 4,237,059
346.22 4,237,060
429.3 4,237,061
438.1 4,237,062
449 R 4,237,063
459 A 4,237,064
502.5 4,237,065
552 SC 4,237,066
561 N 4,237,067
562 N 4,237,068
566 A 4,237,069
580 4,237,070
597 B 4,237,071
601 R 4,237,072
604 AC 4,237,073
654 R 4,237,074
976 4,237,075

CLASS 261

23 A 4,237,076
39 B 4,237,078
39 E 4,237,077
44 A 4,237,079
80 4,237,080

CLASS 264

9 4,237,081
40.6 4,237,082
41 4,237,083
61 4,237,084
65 4,237,085
130 4,237,086
134 4,237,087
235.8 4,237,088
328 4,237,089

CLASS 266

114 4,236,699
161 4,236,700

CLASS 269

21 4,236,701
41 4,236,702
4,236,703
100 4,236,705

CLASS 270

53 4,236,706
94 4,236,704

CLASS 271

11 4,236,707
12 4,236,708
21 4,236,709
108 4,236,710

CLASS 272

8 R 4,236,711
118 4,236,712

CLASS 273

1 M 4,236,713
54 C Re.30,441
94 R 4,236,714
95 R 4,236,715
110 4,236,716
143 R 4,236,717
153 R 4,236,718
265 4,236,719
292 4,236,720

CLASS 277

14 V 4,236,721

CLASS 279

118 4,236,722

CLASS 280

1.5 4,236,723
460 A 4,236,724
611 4,236,725
629 4,236,727
661 4,236,728
709 4,236,726
804 4,236,729
4,236,730

CLASS 282

11.5 A 4,236,731
27.5 4,236,732

CLASS 285

23 4,236,733
26 4,236,734
114 4,236,735
150 4,236,736
234 4,236,737
265 4,236,738

CLASS 289

2 4,236,739

CLASS 290

55 4,237,384

CLASS 294

1 BB 4,236,741
24 4,236,742
27 H 4,236,743
88 4,236,744

CLASS 296

1 C 4,236,746
1 S 4,236,745
24 R 4,236,747
43 4,236,748
156 4,236,749

CLASS 297

183 4,236,750
216 4,236,751
303 4,236,752
364 4,236,753
423 4,236,754
483 4,236,755

CLASS 298

11 4,236,756
22 C 4,236,757

CLASS 299

42 4,236,758

CLASS 303

6 A 4,236,759
6 C 4,236,760
4,236,761
7 4,236,762
54 4,236,763

CLASS 307

66 4,237,385
116 4,237,386
203 4,237,387
214 4,237,388
221 D 4,237,389
362 4,237,390

CLASS 308

8.2 4,236,764
9 4,236,765
15 4,236,766
187.1 4,236,767

CLASS 310

10 4,237,391
52 4,237,392
59 4,237,393
113 4,237,394
4,237,395
154 4,237,396
4,237,397
214 4,237,398
317 4,237,399

CLASS 312

10 4,236,768
135 4,236,769
184 4,236,770
228 4,236,771
242 4,236,772
341 R 4,236,773
351 4,236,774
4,236,775

CLASS 313

204 4,237,400
225 4,237,401

CLASS 315

3.5 4,237,402
98 4,237,403
111 4,237,404
307 4,237,405
377 4,237,406
389 4,237,407

CLASS 318

571 4,237,408

CLASS 320

2 4,237,409
14 4,237,410
21 4,237,411

CLASS 322

28 4,237,412

CLASS 323

4 4,237,413
4,237,414

CLASS 324

54 4,237,415
71 CP 4,237,416
118 4,237,417
150 4,237,418
225 4,237,419

CLASS 328

3 4,237,420
5 4,237,421
61 4,237,422
133 4,237,423
175 4,237,424

CLASS 330

263 4,237,425
296 4,237,426

CLASS 331

94.5 D 4,237,430
94.5 G 4,237,428
4,237,429
94.5 S 4,237,427

CLASS 333

106 4,237,431
194 4,237,432
195 4,237,433
202 4,237,434

CLASS 335

18 4,237,435
63 4,237,436
211 4,237,437
214 4,237,438
230 4,237,439

CLASS 337

227 4,237,440

CLASS 338

22 R 4,237,441
180 4,237,442
202 4,237,443
270 4,237,444

CLASS 339

17 CF 4,236,777
17 R 4,236,776
97 P 4,236,778
143 R 4,236,779
198 G 4,236,780

CLASS 340

58 4,237,445
61 4,237,446
147 T 4,237,447
311 4,237,448
407 4,237,449
571 4,237,450
606 4,237,451
630 4,237,452
4,237,453
682 4,237,454
685 4,237,455
719 4,237,456
728 4,237,457
739 4,237,458
756 4,237,459
4,237,460

CLASS 343

5 FT 4,237,461
5 R 4,237,462
180 4,237,463
814 4,237,464
894 4,237,465

CLASS 346

75 4,237,466
76 R 4,237,467
135.1 4,237,468
155 4,237,469

CLASS 350

81 4,236,781
96.13 4,236,782
4,236,783
96.14 4,236,785
96.15 4,236,786
96.20 4,236,784
96.21 4,236,787
97 4,236,788
183 4,236,789
253 4,236,790
345 4,236,791
357 4,236,792

CLASS 351

21 4,236,793

CLASS 354

25 4,236,794
80 4,236,795
145 4,236,796
152 4,236,797
178 4,236,798
209 4,236,799
213 4,236,800
234 4,236,801
268 4,236,802
286 4,236,803
4,236,804
300 4,236,805
303 4,236,806

CLASS 355

3 R 4,236,807
4 4,236,809
8 4,236,808
10 4,236,810
14 E 4,236,812
14 R 4,236,811
4,236,813
26 4,236,814
29 4,236,815
68 4,236,816
4,236,817
77 4,236,818

CLASS 356

5 4,236,819
41 4,236,820
124 4,236,821
256 4,236,822
351 4,236,823
359 4,236,824
414 4,236,825
432 4,236,826
437 4,236,827
444 4,236,828

CLASS 357

16 4,236,829
24 4,236,830
30 4,236,831
4,237,470
4,237,471
43 4,237,472
51 4,236,832
61 4,237,473
81 4,237,474

CLASS 358

10 4,237,475
23 4,237,478
33 4,237,479
38 4,237,476
44 4,237,477
55 4,237,480
80 4,237,481
81 4,237,482
108 4,237,483
142 4,237,484
4,237,486
154 4,237,487
163 4,237,488
168 4,237,489
174 4,237,490
197 4,237,485
223 4,237,491
225 4,237,492
237 4,237,493
280 4,237,494
282 4,237,495

CLASS 360

40 4,237,496
72.1 4,237,497
72.2 4,237,498
73 4,237,499
75 4,237,501
77 4,237,500
78 4,237,502
99 4,237,503
106 4,237,504
122 4,237,505
135 4,237,506

CLASS 361

19 4,237,507
24 4,237,508
4,237,510
56 4,237,509
80 4,237,511
87 4,237,512
103 4,237,513
117 4,237,514
127 4,237,515
4,237,516
239 4,237,517
267 4,237,518
327 4,237,519
335 4,237,520
384 4,237,521
392 4,237,522

CLASS 362

2 4,237,523
71 4,237,524
104 4,237,525
158 4,237,526
189 4,237,527
263 4,237,528
272 4,237,529
418 4,237,530

CLASS 363

58 4,237,531

CLASS 364

200 4,237,532
4,237,533
4,237,534
4,237,535
465 4,237,536
4,237,537
500 4,237,538
552 4,237,539
705 4,237,540
710 4,237,541
900 4,237,542
4,237,543
4,237,544
4,237,545
4,237,546

CLASS 365

189 4,237,547

CLASS 366

85 4,236,833

CLASS 368

69 4,237,548
134 4,237,549

CLASS 370

4 4,237,550
50 4,237,551
83 4,237,552
89 4,237,553

CLASS 375

15 4,237,554

CLASS 400

120 4,236,834
121 4,236,835
124 4,236,836
4,236,837
144.2 4,236,842
144.3 4,236,838
216.1 4,236,839

CLASS 401

42 4,236,840
131 4,236,841

CLASS 403

2 4,236,843
55 4,236,844
144 4,236,845
298 4,236,846
402 4,236,847
406 4,236,848

CLASS 405

261 4,236,849
291 4,236,850

CLASS 406

72 4,236,851
90 4,236,852

CLASS 410

77 4,236,853
121 4,236,854

CLASS 414

42 4,236,855
54 4,236,856
139 4,236,857
331 4,236,858
460 4,236,859
462 4,236,860
540 4,236,861
633 4,236,862
687 4,236,863
699 4,236,864
786 4,236,865

CLASS 415

2 4,236,866
26 4,236,867
121 A 4,236,868

CLASS 416

95 4,236,869
97 R 4,236,870
146 R 4,236,872
186 R 4,236,871
204 R 4,236,873

CLASS 417

222 4,236,875
250 4,236,876
265 4,236,877
269 4,236,878
315 4,236,874
368 4,236,879
478 4,236,880
502 4,236,881

CLASS 422

13 4,237,090
46 4,237,091
62 4,237,092
4,237,093
100 4,237,094
4,237,095
102 4,237,096
126 4,237,097
171 4,237,098
4,237,099

CLASS 423

6 4,237,100
20 4,237,101
126 4,237,102
207 4,237,103
242 4,237,104
306 4,237,105
315 4,237,106
445 4,237,107
447.4 4,237,108
447.5 4,237,109
488 4,237,110
632 4,237,111

CLASS 424

70 4,237,112
78 4,237,113
4,237,114
92 4,237,115
117 4,237,116
122 4,237,117
140 4,237,118
177 4,237,119
181 4,237,120
200 4,237,121
4,237,122
4,237,123
211 4,237,124
236 4,237,125
241 4,237,126
244 4,237,127
246 4,237,128
4,237,129
248.5 4,237,130
248.51 4,237,131
248.52 4,237,132
4,237,133
4,237,134
250 4,237,135
251 4,237,136
4,237,137
4,237,138
258 4,237,139
260 4,237,140
267 4,237,141
269 4,237,142
270 4,237,143
4,237,144
273 4,237,158
274 4,237,159
275 4,237,160
283 4,237,161
4,237,162
304 4,237,163
4,237,164
308 4,237,165
310 4,237,166
311 4,237,167
326 4,237,168
330 4,237,169

CLASS 425

6 4,236,882
32 4,236,883
72 R 4,236,884
514 4,236,885

CLASS 426

21 4,237,170
127 4,237,171
241 4,237,145
330 4,237,146
590 4,237,147

CLASS 427

42 4,237,148
58 4,237,149
74 4,237,150
4,237,151
136 4,237,152
140 4,237,153
241 4,237,154
242 4,237,155
248 A 4,237,156
352 4,237,157

CLASS 428

63 4,237,172
65 4,237,173
99 4,237,174
192 4,237,175
212 4,237,176
215 4,237,177
242 4,237,178
276 4,237,179
280 4,237,180
307 4,237,181
310 4,237,182
336 4,237,183
4,237,184
337 4,237,185
379 4,237,186
399 4,237,187
418 4,237,188
457 4,237,189
513 4,237,190
542 4,237,191
659 4,237,192
678 4,237,193
922 4,237,194

CLASS 429

44 4,237,195
50 4,237,196
81 4,237,197
93 4,237,198
94 4,237,199
102 4,237,200
104 4,237,201
120 4,237,202
122 4,237,203
194 4,237,204
234 4,237,205

CLASS 430

11 4,237,206
17 4,237,207
270 4,237,208
280 4,237,216
317 4,237,209
318 4,237,210
338 4,237,211
346 4,237,212
353 4,237,213
387 4,237,217
441 4,237,214
619 4,237,215

CLASS 432

14 4,236,886
4,236,887
106 4,236,888

CLASS 433

86 4,236,889

CLASS 435

2 4,237,218
7 4,237,219
15 4,237,221
25 4,237,222
30 4,237,223
58 4,237,220
68 4,237,224
75 4,237,225
99 4,237,226
108 4,237,227
116 4,237,228
182 4,237,229
207 4,237,230
234 4,237,231
243 4,237,232
254 4,237,233
301 4,237,234

CLASS 455

108 4,237,555
154 4,237,556

CLASS 521

118 4,237,235
123 4,237,236
128 4,237,237
131 4,237,238
134 4,237,239
159 4,237,240

CLASS 525

110 4,237,241
119 4,237,242
154 4,237,243
171 4,237,244
272 4,237,245
332 4,237,246
335 4,237,247
4,237,248
369 4,237,249
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